BRL

REPORT NO. 1496

HYDROCARBON COMBUSTION AND PHYSICAL PROPERTIES

by

Dudley J. McCracken

September 1970

U.S. ARMY ABERDEEN RESEARCH AND DEVELOPMENT CENTER
BALLISTIC RESEARCH LABORATORIES
ABERDEEN PROVING GROUND, MARYLAND

377

BALLISTIC   RESEARCH   LABORATORY

REPORT NO. 1496

SEPTEMBER 1970

HYDROCARBON COMBUSTION AND PHYSICAL PROPERTIES

Dudley J. McCracken

Terminal Ballistics Laboratory

ABERDEEN   PROVING   GROUND, MARYLAND

BALLISTIC RESEARCH LABORATORY

REPORT NO. 1496

DJMcCracken/meg
Aberdeen Proving Ground,Md.
September 1970

HYDROCARBON COMBUSTION AND PHYSICAL PROPERTIES

ABSTRACT

Many tabulations of hydrocarbon combustion properties are found in the literature. Unfortunately, most of these report what the author believes to be the best value for each property, and do not include all combustion properties. This report presents a compilation of combustion and physical properties which can be used in a variety of combustion problems. Referenced values are included for flash point, flammability limits, autoignition temperature, maximum flame velocity, minimum ignition energy, and quenching distance. The physical properties include molecular weight, carbon-hydrogen ratio, vapor density, heats of combustion and vaporization, liquid density, refractive index, surface tension, viscosity and vapor pressure data.

Preceding page blank

TABLE OF CONTENTS

Preceding page blank

BLANK PAGE

I. INTRODUCTION

The purpose of this report is to collate hydrocarbon combustion and physical properties which appear in the literature. Only those hydrocarbons are included for which combustion data has been reported.

The hydrocarbons are grouped into alkanes, naphthenes, alkenes, dienes alkynes, aromatics, fuzed rings and a final group which includes hydrocarbons which would fit within two or more groups. In each group, the compounds are listed in order of increasing carbon number.

Each experimental value in the report is followed by references and notes which apply to that value. References are denoted by numbers and notes by letters. When an author cited a primary source which could not be obtained by this author, both sources have been cited in this report. It must be pointed out that many authors did not give references even though they did not do the original work. The following examples illustrate the system of references and notes:

1,2,3 - Datum listed in references 1,2 and 3.

(1)(2) - Datum listed in reference 1 which cites reference 2.

1(A) - Note A applies to the datum in reference 1.

(1)(2)(A) - Note A applies to the datum listed in reference 1 which cites reference 2 as the source.

1(A,B) - Notes A and B apply to the datum listed in reference 1.

1,2(A,B) - Datum listed in references 1 and 2 but notes A and B apply only to datum in reference 2.

(1,2)(A,B) - Notes A and B apply to both references 1 and 2.

An alphebetical list of compounds and synonyms which are included in this report is given in Section VI.

Preceding page blank

II. COMBUSTION PROPERTIES

A. Flash Point

The flash point is defined as the lowest liquid temperature
at which the vapor gives a visible flash of light when a small flame
is applied in a prescribed type of apparatus. The American Society
for Testing and Materials (ASTM Standards, Part 17, 1968) recognizes
four types of apparatuses that may be used to determine the flash
point of a liquid. The Tag open-cup tester (ASTM-D 1310) may be used
for liquids having flash points between $0^{o}F$ ($-18^{o}C$) and $235^{o}F$ ($113^{o}C$).
The Tag closed tester (ASTM-D 56) may be used for all mobile liquids
having flash points below $175^{o}F$ ($79^{o}C$), except products classified as
Grade No. 4 or heavier fuel oil. The Cleveland open-cup tester
(ASTM-D 92) may be used for flash point determination of all petroleum
products except fuel oils and those having open-cup flash points
below $175^{o}F$ ($79^{o}C$). The Pensky-Martens closed tester (ASTM-D 93)
may be used for fuel oils, lubricating oils, viscous materials and
suspensions of solids, but may not be used for drying oils, solvent-
type liquid waxes or cut-back asphalt. The type of apparatus used to
determine the flash point was listed as a note in this report whenever
it was given in the referenced article, however, many of the published
tables of flash points differentiate only between the closed- and
open-cup test. The flash point was converted by this author from
the usual units of degrees Fahrenheit to degrees Centigrade to conform
with Army policy and was rounded off to the nearest $0.5^{o}C$ after
conversion. Flash points are given as closed cup(cc) or open cup(oc).

B. Flammable Limits

The flammable region of a compound is defined as the range of
vapor concentrations in an oxidizing atmosphere such as oxygen or air
in which flame will propagate over a prescribed distance determined by

8

the apparatus after the vapor has been ignited. Ignition may be by
any source such as spark, hot wire, exploding wire or flame. For
each hydrocarbon there will be a region of flammable concentrations.
In this report the lower and upper bounds of this region (LEL and
UEL) are given in volume per cent of hydrocarbon in air. Unless
otherwise noted, the flammable limits are given in air. Flammable
limits in oxygen are denoted by note (B). Notes are included in
this report to describe the type of apparatus and system temperature
when a description was given in the literature source.

C. Autoignition Temperature

The ASTM standardized a procedure and apparatus for the
determination of autoignition temperature and autoignition delay
in 1963 as procedure D 2155. (ASTM Standards, Part 17, 1968.) The
procedure involves injecting a drop of liquid into a preheated
borosilicate Erlenmeyer flask at atmospheric pressure. The lowest
flask temperature at which a sudden flash of light occurs for a series
of prescribed sample volumes is taken to be the autoignition temperature,
and the time from introduction of the fuel droplet into the flask
for the flash to occur is taken to be the autoignition delay time.

Various configurations and materials of construction of the
combustion chamber, such as crucibles, flasks, bombs and spheres
made of stainless steel, iron or glass have been used by various
investigators. The combustible material has been introduced in a
vapor, spray or drop form. The fact that the autoignition temperature
is extremely dependent on the material of construction, configuration
of apparatus, and test procedure is immediately evident by noting
that values of 208, 232, 236, 250, 253, 425, and 463°C have been
reported for the autoignition temperature of decane in air at
atmospheric pressure. The literature values listed in this report

9

are referenced, but the procedure and test apparatus are included as a note in only those cases where original papers were located. The autoignition temperature was converted by this author from Fahrenheit to Centigrade and rounded to the nearest degree after conversion.

D. Maximum Flame Velocity and Temperature

The maximum flame velocities reported in the literature were calculated for a flame front propagating down a tube or for a Bunsen Burner flame. The volume percent fuel which gave the maximum velocity was noted and the adiabatic flame temperature corresponding to that fuel concentration was calculated for both cases. The Bunsen burner experiments gave values about 10 percent higher than the tube experiments. Both experimental procedures used an oxidizing atmosphere of air.

E. Minimum Ignition Energy and Quenching Distance

The minimum ignition energies listed in this report apply to spark ignition. The reported distances were the minimum electrode spacings with which ignition was possible. Values are listed for stoichiometric fuel-air minimum ignition energy and quenching distance at atmospheric pressure. The minimum ignition energy and quenching distance for any fuel-air mixture was listed as the absolute minimum ignition energy and absolute minimum quenching distance. It should be noted that the electrode spacing which gave the minimum ignition energy is not the same as the quenching distance.

III. PHYSICAL PROPERTIES

A. Molecular Weight and Carbon-Hydrogen Ratio

An atomic weight of 12.011 for carbon and 1.00 for hydrogen have been used in the calculation of the molecular weight (MW). The carbon-hydrogen ratio (C/H) is a weight ratio.

10

B. Vapor Density

The vapor density (VD) as used in the literature might more aptly
be termed the vapor specific gravity since it is calculated as the
ratio of the molecular weight of air to the molecular weight of
hydrocarbon.

C. Heats of Combustion and Vaporization

The net heat of combustion of hydrocarbon liquid (gas) refers to
the energy released during the complete combustion of liquid (gaseous)
hydrocarbon to gaseous water and carbon dioxide at $25^{\circ}C$. The gross
heat of combustion refers to liquid water and gaseous carbon dioxide
products at $25^{\circ}C$. Heats of combustion and vaporization have been
converted to Kcal/mole and cal/gram when given in other units.

D. Density, Refractive Index, Surface Tension and Viscosity

An attempt was made to report these properties at the same
temperatures, and preferably by the same author, for each separate
compound. The units are grams per milliliter(gram/ML) for density,
dynes per square centimeter for surface tension, and centistokes (cs)
for viscosity. In a few cases the viscosity was given in Saybolt Seconds
Universal (SSU).

E. Vapor Pressure

Vapor pressure in millimeters of mercury are listed as a function
of temperature in degrees Centigrade. Two sets of vapor pressure
equation coefficients have been calculated by the author using a least
squares technique. The first set of coefficients apply to Equation 1,
Antoine's equation, which is of the form,

$$Log_{10}P = A + B/(T+C), \qquad (1)$$

11

where p is vapor pressure in mm of Hg, T is temperature in degrees C, and A,B, and C are constants. The second set of coefficients apply to Equation 2.

$$Log_e p = A + B/T + C(Log_e T) + Dp/T^2,$$ (2)

where p is vapor pressure in mm of Hg, T is temperature in degrees Kelvin, and A, B, C, and D are constants.

Vapor pressure is easier to calculate by hand from Antoine's equation because it is explicit in vapor pressure. Equation 2, which is implicit in vapor pressure, in general yields more accurate results. The maximum error is defined as being

$$E_{max} = MAX ((p_{i,calculated} - p_{i, actual})/p_{i,actual}),$$

i = 1, 10, 30, 40, 100, 400, 760

The maximum error and the vapor pressure at which the maximum error occurs is listed beside each set of coefficients. The coefficients should be used only over the range 1 mm to 760 mm of Hg for the maximum error to apply. In cases where the melting point is in this range, either the coefficients listed here may be used, or if more accurate data are necessary, the Antoine coefficients from other sources which apply only to the solid or liquid phase should be used,since a discontinuity in the vapor pressure curve will occur at the melting point.

12

IV. HYDROCARBON PROPERTIES

METHANE

SYNONYMS. MARSH GAS, METHYL HYDRIDE
FORMULA= CH4   C/H= 2.979 MW= 16.043 VD=   .5532

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF GAS   (NET)   191.76   11953.   11
                       (GROSS)   212.80   13264.   11
HEAT OF VAPORIZATION(25 C)

DENSITY (GRAM/ML)
REFRACTIVE INDEX
SURFACE TENSION
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T -205.9 -195.5   -187.7 -181.4 -168.8 -161.5   21

   VAPOR PRESSURE EQUATION COEFFICIENTS
                A   B   C   D   MAX ERR AT P
EQUATION 1 -3.5151 -445.84   95.01   220.23   1.
EQUATION 2   15.328 -1142.5   .39   -5.3501   1.70 400.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                     -188. (8)(9)

FLAMMABLE LIMITS   LOWER   UPPER
              VOL PER   REF   VOL PER   REF
                3.8   13(U)   14.2   13(U)
                5.0   (8)(15)   15.   (8)(15)
                5.1   12(A,B)   61.   12(A,B)
                5.26   (17)(77)   14.3   (17)(77)
                5.3   1,3,4,12(A)   14.0   1,3,12(A)
                5.35   53(W,X)   14.85   53(W,X)
                5.40   53(W,Y)   13.95   53(W,Y)
                5.95   53(W,Z)   13.35   53(W,Z)
                                         13.9   4

AUTOIGNITION TEMPERATURE
     DEG C DELAY(SEC) REF   DEG C   REF
     537.   3,4   538.   1
     556.   (22)(36)(8) 632.   (22)(48)
     645.   28(AL)

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL
    33.8 (69)   2235 (55)   9.96 (69)
                          STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)= .33   56   .29   56
QUENCHING DISTANCE(CM)=   .19   80   .08   (7)(56)

14

ETHANE

SYNONYMS. BIMETHYL, DIMETHYL, METHYL METHANE, ETHYL HYDRIDE
FORMULA= C2H6   C/H= 3.972 MW= 30.070 VD= 1.0369

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF GAS   (NET)   341.26   11349.   11
                  (GROSS)   372.82   12398.   11
HEAT OF VAPORIZATION(25 C)

DENSITY (GRAM/ML)
REFRACTIVE INDEX
SURFACE TENSION
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T -159.5 -142.9   -129.8 -119.3   -99.7   -88.6   21

  VAPOR PRESSURE EQUATION COEFFICIENTS
               A   B   C   D   MAX ERR AT P
EQUATION 1   1.5630   5.61   104.39   2792.04   1.
EQUATION 2   48.996 -2698.8   -5.34   4.4339   -.22   400.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                     -135. 4,(8)(9)

FLAMMABLE LIMITS   LOWER   UPPER
               VOL PER   REF   VOL PER   REF
                 2.8   13(U)   13.8   13(U)
                 2.9   (8)(15)   13.   (8)(15)
                 3.0   3,4,12(A)   12.5   3,4,12(A)
                 3.12   53(W,X)   14.95   53(W,X)
                 3.15   53(W,Y)   12.85   53(W,Y)
                 3.26   53(W,Z)   10.15   53(W,Z)
                 3.3   1   10.60   1
                 3.0   12(A,B)   66.   12(A,B)

AUTOIGNITION TEMPERATURE
      DEG C   DELAY(SEC)   REF   DEG C   REF
      472.   (22)(29)   504.   9
      510.   1   515.   3,4

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL
    40.1   (69)   2246 (55)   6.28   (69)
                        STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)= .3   56   .24   56
QUENCHING DISTANCE(CM)=   .2   56   .19   56

15

PROPANE

SYNONYMS. DIMETHYLMETHANE
FORMULA= C3H8   C/H= 4.469 MW= 44.097 VD= 1.5206

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF GAS   (NET)   488.53   11078.   11
                    (GROSS)   530.61   12033.   11
HEAT OF VAPORIZATION(25 C)   3.60   81.75   11
----
                    20 C   REF   25 C   REF
DENSITY (GRAM/ML) .5005 11(D)   .4928 11(D)
REFRACTIVE INDEX 1.2898 20
SURFACE TENSION
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T -128.9 -108.5   -92.4   -79.6   -55.6   -42.1   21

 VAPOR PRESSURE EQUATION COEFFICIENTS
             A   B   C   D   MAX ERR AT P
EQUATION 1 1.7189   5.14   102.97   3216.45   1.
EQUATION 2 56.562 -3644.8   -6.29   7.5738   .24   40.

FLASH POINT(DEG C)   (CC) REF   (OC)   REF
                    -104.5 1,(8)(9)

FLAMMABLE LIMITS   LOWER   UPPER
              VOL PER   REF   VOL PER   REF
                2.1   (8)(15)   9.5   (8)(15)
                2.2   13(U)   10.7   13(U)
                2.2   3,4,12(A)   9.5   3,12(A)
                2.3   1   7.3   1
                                        9.6   4
                2.3   12(A,B)   55.   12(A,B)
                2.4   (17)(78)(B)   57.   (17)(78)(B)

AUTOIGNITION TEMPERATURE
     DEG C DELAY(SEC) REF   DEG C   REF
     466.   3,4   468.   1
     468.   13.   54(B,AX)
     493.   6.   54(AX)
     504.   6.0   49

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL
    39.0 (69)   2251 (55)   4.54 (69)
                         STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)= .4   56   .25   56
QUENCHING DISTANCE(CM)=   .21   56   .19   56

16

BUTANE

SYNONYMS. METHYLETHYLMETHANE, BUTYL HYDRIDE
FORMULA= C4H10   C/H= 4.766 MW= 58.124 VD= 2.0043

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF GAS   (NET)   635.05   10926.   11
                      (GROSS)   687.65   11831.   11
HEAT OF VAPORIZATION(25 C)   5.03   86.62   11
----
                     20 C   REF   25 C   REF
DENSITY (GRAM/ML) .5788   11(D)   .5730   11(D)
REFRACTIVE INDEX 1.3326   11(D)   1.3292   11(D)
SURFACE TENSION
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   10u   400   760   REF
T -101.5 -77.8   -59.1   -44.2   -16.3   -.5   21

  VAPOR PRESSURE EQUATION COEFFICIENTS
              A   B   C   D   MAX ERR AT P
EQUATION 1 6.8132 -939.45   239.34   -.55   10.
EQUATION 2 63.793 -4572.0   -7.22   10.7405   -.24   10.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                     -60.   1,4
                     -74.   (8)(9)

FLAMMABLE LIMITS   LOWER   UPPER
                VOL PER   REF   VOL PER   REF
                 1.6   1   6.5   1
                 1.7   13(U)   9.4   13(U)
                 1.8   (8)(15)   8.4   (8)(15)
                 1.9   3,4,12(A)   8.5   3,4,12(A)
                 1.93   (17)(77)   9.05   (17)(77)
                 1.8   12(A,B)   49.   12(A,B)

AUTOIGNITION TEMPERATURE
     DEG C   DELAY(SEC)   REF   DEG C   REF
     405.   3,4   430.   1
     408.   5.   54(AX)
     283.   28.   54(B,AX)
     430.   6.0   49   431.   9,(7)(26)

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL
     37.9 (69)   2256 (55)   3.52 (69)
                          STOICH REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)= .76   56   .25   56
QUENCHING DISTANCE(CM)=   .3   7   .18   7

17

2-METHYLPROPANE

SYNONYMS. ISOBUTANE, TRIMETHYLMETHANE
FORMULA= C4H10   C/H= 4.766   MW= 58.124   VD= 2.0043

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF GAS	(NET)	633.05	10891.	11
	(GROSS)	685.65	11796.	11
HEAT OF VAPORIZATION(25 C)		4.57	78.62	11

---

	20 C	REF	25 C	REF
DENSITY (GRAM/ML)	.5572	11(D)	.5510	11(D)
REFRACTIVE INDEX	1.3169	20		
SURFACE TENSION				
VISCOSITY (CS)				

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	-109.2	-86.4	-72.5		-54.1		-11.7	20

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	6.7582	-886.49	240.37		.15	10.
EQUATION 2	63.555	-4357.2	-7.25	9.7880	.00	30.

FLASH POINT(DEG C)	(CC)	REF	(OC)	REF
	-82.5	4,(8)(9)		

FLAMMABLE LIMITS	LOWER		UPPER	
	VOL PER	REF	VOL PER	REF
	1.8	3,4,(8)(15)	8.4	3,4,(8)(15)
	1.8	12(A)	8.4	12(A)
	1.9	1	8.5	1
	2.0	13(V)	9.3	13(V)
	1.83	65	8.43	65
	1.8	12(A,B)	48.	12(A,B)

AUTOIGNITION TEMPERATURE

DEG C	DELAY(SEC)	REF	DEG C	REF
543.		1	462.	3,4
462.	14.	65		
319.	19.2	65(B)		
477.	18.0	49		

MAX FLAME VEL(CM/SEC)	FLAME TEMP(DEG K)	VOL PERCENT FUEL
34.9 (69)	2259 (55)	3.48 (69)
	STOICH REF	ABS MIN REF

MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

PENTANE

SYNONYMS. AMYL HYDRIDE
FORMULA= C5H12   C/H= 4.965 MW= 72.151 VD= 2.4880

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF LIQUID   (NET)   775.66   10750.   11
                         (GROSS)   838.78   11625.   11
HEAT OF VAPORIZATION(25 C)   6.32   87.54   11

---

	20 C	REF	30 C	REF
DENSITY (GRAM/ML)	.62624	11	.ɔ1649	20
REFRACTIVE INDEX	1.35748	11	1.35194	20
SURFACE TENSION	16.05	(8)(60)	14.95	20
VISCOSITY (CS)	.375	20	.351	20

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	-76.6	-50.1		-29.2	-12.6	18.5	36.1	21

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	6.8402	-1059.60	231.51		-.16	10.
EQUATION 2	70.222	-5477.7	-8.02	14.2734	-.30	10.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                      -49.5   1,4,10

FLAMMABLE LIMITS   LOWER   UPPER
                 VOL PER   REF   VOL PER   REF
            1.0 AT 28 C   14(U)   9.15 AT 28 C   14(U)
                 1.4   4,(8)(15)   8.0   4
                 1.4   13(U)   8.7   13(U)
                 1.42   53(W,X)   8.0   53(W,X)
                 1.44   53(W,Y)   7.45   53(W,Y)
                 1.48   53(W,Z)   4.64   53(W,Z)
                 1.5   3,12(A)   7.8   3,12(A)
                 1.62   (17)(77)   8.3   (8)(15)

AUTOIGNITION TEMPERATURE
     DEG C   DELAY(SEC)   REF   DEG C   REF
     284.   9   309.   1,3,4
     296.   8.   54(AX)
     264.   40.   54(B,AX)
     300.   (22)(24)(B)   579.   40(N)
     284.   24.0   49   418.   46

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL
     38.5 (69)   2249 (55)   2.92 (69)
                          STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)= .82   (7)(57)(E)   .22   (7)(59)(F)
QUENCHING DISTANCE(CM)=   .33   7   .18   7

19

2-METHYLBUTANE

SYNONYMS. ISOPENTANE, ISOAMYL HYDRIDE, ETHYLDIMETHYLMETHANE
FORMULA= C5H12   C/H= 4.965   MW= 72.151   VD= 2.4880

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	774.10	10729.	11
	(GROSS)	837.22	11604.	11
HEAT OF VAPORIZATION(25 C)		5.94	82.29	11

---

	20 C	REF	25 C	REF
DENSITY (GRAM/ML)	.61967	11	.61462	11
REFRACTIVE INDEX	1.35373	11	1.35088	11
SURFACE TENSION	15.00	(8)(60)	14.46	11
VISCOSITY (CS)	.364	20		

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	-82.9	-57.0		-36.5	-20.2	10.5	27.8	21

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	6.7791	-1015.94	232.77		.20	400.
EQUATION 2	70.851	-5305.6	-8.19	15.6054	.33	40.

FLASH POINT(DEG C)	(CC)	REF	(OC)	REF
	-51.	1		
	-56.5	10		

FLAMMABLE LIMITS   LOWER   UPPER

VOL PER	REF	VOL PER	REF
1.1	13(V)	7.7	13(V)
1.4	3,4,(8)(15)	7.6	3,4
1.4	12(A)	7.6	12(A)
1.61	(17)(77)		

AUTOIGNITION TEMPERATURE

DEG C	DELAY(SEC)	REF	DEG C	REF
427.	6.0	49	420.	1,3,4
294.		54(B)	420.	54

MAX FLAME VEL(CM/SEC)	FLAME TEMP(DEG K)	VOL PERCENT FUEL
36.6 (69)	2253 (55)	2.89 (69)

	STOICH	REF	ABS MIN	REF
MIN IGN ENERGY(MILLIJOULE)=	.96	(7)(57)(E)	.21	(7)(59)(F)
QUENCHING DISTANCE(CM)=	.36	7	.18	7

2,2-DIMETHYLPROPANE

SYNONYMS. NEOPENTANE, TETRAMETHYLMETHANE
FORMULA= C5H12   C/H= 4.965 MW= 72.151 VD= 2.4880

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	772.03	10700.	11
	(GROSS)	835.15	11575.	11
HEAT OF VAPORIZATION(25 C)		5.20	72.14	11

---

	20 C	REF	25 C	REF	30 C	REF
DENSITY (GRAM/ML)	.5910	11(D)	.5851	11(D)	.	
REFRACTIVE INDEX	1.342	11(D)	1.339	11(D)		
SURFACE TENSION	12.05	20			10.98	20
VISCOSITY (CS)						

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	-102.0	-76.7		-56.1	-39.1	-7.1	9.5	21

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	6.4694	-905.46	242.05		2.92	400.
EQUATION 2	82.769	-4964.9	-10.45	45.9319	-.17	40.

FLASH POINT(DEG C)	(CC)	REF	(OC)	REF
	-65.	(8)(9)		
	-75.	20(AY)		

FLAMMABLE LIMITS   LOWER   UPPER

	VOL PER	REF	VOL PER	REF
	1.3	13(V)	8.7	13(V)
	1.4	3,4,(8)(15)	7.5	3,4
	1.4	12(A)	7.5	12(A)

AUTOIGNITION TEMPERATURE

DEG C	DELAY(SEC)	REF	DEG C	REF
456.	3.0	49	450.	1,3,4

MAX FLAME VEL(CM/SEC)	FLAME TEMP(DEG K)	VOL PERCENT FUEL
33.3 (69)	2254 (55)	2.85 (69)
	STOICH REF	ABS MIN REF

MIN IGN ENERGY(MILLIJOULE)= 1.57   (7)(57)(BB)
QUENCHING DISTANCE(CM)=

HEXANE

SYNONYMS. HEXYL HYDRIDE
FORMULA= C6H14   C/H= 5.107   MW= 86.178   VD= 2.9717

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	921.37	10691.	11
	(GROSS)	995.01	11546.	11
HEAT OF VAPORIZATION(25 C)		7.54	87.49	11

---

	20 C	REF	30 C	REF
DENSITY (GRAM/ML)	.65937	11	.65023	20
REFRACTIVE INDEX	1.37486	11	1.36938	20
SURFACE TENSION	18.40	(8)(60)	17.38	20
VISCOSITY (CS)	.4727	(8)(60)	.4389	20

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	-53.9	-25.0		-2.3	15.8	49.6	68.7	21

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	6.8608	-1162.15	223.29		-.03	760.
EQUATION 2	77.262	-6404.1	-8.92	18.2939	-.22	400.

FLASH POINT(DEG C)	(CC)	REF	(OC)	REF
	-21.5	3,4	-25.5	4
	-23.5	10		

FLAMMABLE LIMITS   LOWER   UPPER

	VOL PER	REF	VOL PER	REF
	1.1 AT 50 C	14(U)	8.6 AT 50 C	14(U)
	1.1	6	7.7	(8)(15)
	1.2	1,3,4,(8)(15)	6.9	1
	1.2	12(A),13(U)	7.5	3,4,6,12(A)
	1.46	(17)(77)	8.1	13(U)

AUTOIGNITION TEMPERATURE

DEG C	DELAY(SEC)	REF	DEG C	REF
234.		3,4	248.	(22)(41)
253.		38	260.	1
261.	30.0	49	261.	6,(22)(43)
296.		(22)(24)(B)	487.	(22)(23)
520.		40(N)		

MAX FLAME VEL(CM/SEC)	FLAME TEMP(DEG K)	VOL PERCENT FUEL
38.5 (69)	2241 (55)	2.51 (69)

	STOICH	REF	ABS MIN	REF
MIN IGN ENERGY(MILLIJOULE)=	.95	56	.23	56
QUENCHING DISTANCE(CM)=	.36	7	.18	7

22

2-METHYLPENTANE

SYNONYMS. DIMETHYLPROPYLMETHANE, ISOHEXANE
FORMULA= C6H14   C/H= 5.107   MW= 86.178   VD= 2.9717

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	920.07	10676.	11
	(GROSS)	993.71	11531.	11
HEAT OF VAPORIZATION(25 C)		7.14	82.83	11

----

	20 C	REF	30 C	REF
DENSITY (GRAM/ML)	.65315	11	.64386	20
REFRACTIVE INDEX	1.37145	11	1.36586	20
SURFACE TENSION	17.38	20	16.37	20
VISCOSITY (CS)	.4746	20	.4349	20

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	-60.9	-32.1		-9.7	8.1	41.6	60.3	21

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	6.9253	-1178.30	231.03		-.49	100.
EQUATION 2	63.446	-5646.3	-6.88	10.3702	.28	400.

FLASH POINT(DEG C)	(CC)	REF	(OC)	REF
	-23.5	4		
	-14.	20(AY)		

FLAMMABLE LIMITS   LOWER   UPPER

	VOL PER	REF	VOL PER	REF
	1.2	3,4,(8)(15)	7.0	3,4
	1.2	12(A)	7.0	12(A)
	1.4	13(V)	7.6	13(V)

AUTOIGNITION TEMPERATURE

DEG C	DELAY(SEC)	REF	DEG C	REF
306.		3,4	275.	(22)(33)(B)
307.	6.0	49	284.	54(B)

MAX FLAME VEL(CM/SEC)	FLAME TEMP(DEG K)	VOL PERCENT FUEL
36.8 (69)	2251 (55)	2.46 (69)
	STOICH REF	ABS MIN REF

MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

3-METHYLPENTANE

SYNONYMS. DIETHYLMETHYLMETHANE
FORMULA= C6H14   C/H= 5.107   MW= 86.178   VD= 2.9717

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	920.61	10683.	11
	(GROSS)	994.25	11537.	11
HEAT OF VAPORIZATION(25 C)		7.23	83.95	11

----

	20 C	REF	25 C	REF
DENSITY (GRAM/ML)	.66431	11	.65976	11
REFRACTIVE INDEX	1.37652	11	1.37386	11
SURFACE TENSION	18.12	20	17.60	11
VISCOSITY (CS)	.486	(8)(61)	.4653	20

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	-59.0	-30.1		-7.3	10.5	44.2	63.3	21

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	6.9047	-1178.79	229.72		.65	40.
EQUATION 2	63.978	-5717.8	-6.95	9.9353	.74	40.

FLASH POINT(DEG C)	(CC)	REF	(OC)	REF
	-31.5	(8)(9)(J)		
	-35.	20(AY)		

FLAMMABLE LIMITS	LOWER		UPPER	
	VOL PER	REF	VOL PER	REF
	1.2	8(DD)	7.7	8(DD)

AUTOIGNITION TEMPERATURE

DEG C	DELAY(SEC)	REF	DEG C	REF
304.	12.0	49	273.	(22)(33)(B,FF)

MAX FLAME VEL(CM/SEC)	FLAME TEMP(DEG K)	VOL PERCENT FUEL
36.7 (69)	2245 (55)	2.48 (69)
	STOICH REF	ABS MIN REF

MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

2,2-DIMETHYLBUTANE

SYNONYMS. NEOHEXANE
FORMULA= C6H14   C/H= 5.107   MW= 86.178   VD= 2.9717

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	917.88	10651.	11
	(GROSS)	991.52	11505.	11
HEAT OF VAPORIZATION(25 C)		6.62	76.78	11

---

	20 C	REF	25 C	REF
DENSITY (GRAM/ML)	.64916	11	.64446	11
REFRACTIVE INDEX	1.36876	11	1.36595	11
SURFACE TENSION	16.30	20	15.81	11
VISCOSITY (CS)	.5777	20	.5446	20

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	-69.3	-41.5		-19.5	-2.0	31.0	49.7	21

VAPOR PRESSURE EQUATION COEFFICIENT'.

	A	B	C	D	MAX ERR	AT P
EQUATION 1	6.7578	-1082.39	229.47		.18	40.
EQUATION 2	70.231	-5639.8	-8.00	16.1146	.32	40.

FLASH POINT(DEG C)	(CC)	REF	(OC)	REF
	-48.	3,4		
	-47.	20(AY)		
	-31.5	(8)(9)(J)		

FLAMMABLE LIMITS	LOWER		UPPER	
	VOL PER	REF	VOL PER	REF
	1.2	3,4,(8)(15)	7.0	3,4
	1.2	12(A,CC)	7.0	12(A,CC)
	1.4	13(V)	7.0	13(V)

AUTOIGNITION TEMPERATURE

DEG C	DELAY(SEC)	REF	DEG C	REF
440.	12.0	49	425.	1,3,4,(22)(30)

MAX FLAME VEL(CM/SEC)	FLAME TEMP(DEG K)	VOL PERCENT FUEL
35.7 (69)	2254 (55)	2.43 (69)

	STOICH	REF	ABS MIN	REF
MIN IGN ENERGY(MILLIJOULE)=	1.64	(7)(57)	.25	(7)(59)(F)
QUENCHING DISTANCE(CM)=	.46	7	.18	7

25

2,3-DIMETHYLBUTANE

SYNONYMS. DIISOPROPYL
FORMULA= C6H14   C/H= 5.107   MW= 86.178   VD= 2.9717

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	919.41	10669.	11
	(GROSS)	993.05	11523.	11
HEAT OF VAPORIZATION(25 C)		6.95	80.76	11

---

	20 C	REF	25 C	REF
DENSITY (GRAM/ML)	.66164	11	.65702	11
REFRACTIVE INDEX	1.37495	11	1.37231	11
SURFACE TENSION	17.37	20	16.87	11
VISCOSITY (CS)	.582	(8)(61)		

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	-63.6	-34.9		-12.4	5.4	39.0	58.0	21

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	6.8615	-1152.32	231.53		-.47	100.
EQUATION 2	61.636	-5482.6	-6.64	9.1736	.27	40.

FLASH POINT(DEG C)	(CC)	REF	(OC)	REF
	-29.	3,4		
	-37.	20(AY)		

FLAMMABLE LIMITS	LOWER			UPPER	
	VOL PER	REF		VOL PER	REF
	1.14 AT 50 C	14(U)	8.3 AT 50 C		14(U)
	1.2	3,4,(8)(15)		7.0	3,4
	1.2	12(A,CC)		7.0	12(A,CC)
	1.3	13(V)		7.8	13(V)

AUTOIGNITION TEMPERATURE

DEG C	DELAY(SEC)	REF	DEG C	REF
42.	12.0	49	420.	1,3,4
298.		54(8)	420.	54

MAX FLAME VEL(CM/SEC)	FLAME TEMP(DEG K)	VOL PERCENT FUEL
36.3 (69)	2252 (55)	2.45 (69)
	STOICH REF	ABS MIN REF

MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

HEPTANE

SYNONYMS. HEPTYL HYDRIDE, DIPROPYLMETHANE
FORMULA= C7H16   C/H= 5.213 MW= 100.206 VD= 3.4554

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	1067.11	10649.	11
	(GROSS)	1151.27	11489.	11
HEAT OF VAPORIZATION(25 C)		8.74	87.17	11

---

	20 C	REF	30 C	REF
DENSITY (GRAM/ML)	.68376	11	.67525	20
REFRACTIVE INDEX	1.38764	11	1.38250	20
SURFACE TENSION	20.14	(8)(60)	18.34	20
VISCOSITY (CS)	.6097	(8)(60)	.5586	20

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	-34.0	-2.1		22.3	41.8	78.0	98.4	21

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	7.0764	-1362.89	226.56		1.05	10.
EQUATION 2	58.012	-6182.5	-5.87	1.5546	-.45	40.

FLASH POINT(DEG C)	(CC)	REF	(OC)	REF
	-4.	1,4	-1.	4
	-1.	(8)(9)(J)		

FLAMMABLE LIMITS	LOWER		UPPER	
	VOL PER	REF	VOL PER	REF
	.97 AT 50 C	14(U)	8.5 AT 50 C	14(U)
	1.0	(8)(15)	7.0	(8)(15)
	1.2	1,3,4,12(A)	6.7	1,3,4,12(A)
	1.26	(17)(77)		

AUTOIGNITION TEMPERATURE

DEG C	DELAY(SEC)	REF	DEG C	REF
230.	34.	54(AX)		
214.	54.	54(B,AX)		
300.		(22)(24)(B)	233.	1,38
223.		3,4	250.	50,74
247.	30.0	49	451.	40(N)
259.		46		

MAX FLAME VEL(CM/SEC)	FLAME TEMP(DEG K)	VOL PERCENT FUEL	
38.6 (69)	2208 (55)	2.26 (69)	
	STOICH REF	ABS MIN REF	
MIN IGN ENERGY(MILLIJOULE)=	1.1 56	.24 56	
QUENCHING DISTANCE(CM)=	.38 7	.18 7	

27

2-METHYLHEXANE

SYNONYMS. ETHYLISOBUTYLMETHANE, ISOHEPTANE
FORMULA= C7H16   C/H= 5.213 MW= 100.206 VD= 3.4554

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	1065.81	10636.	11
	(GROSS)	1149.97	11476.	11
HEAT OF VAPORIZATION(25 C)		8.32	83.01	11

---

	20 C	REF	25 C	REF
DENSITY (GRAM/ML)	.67859	11	.67439	11
REFRACTIVE INDEX	1.38485	11	1.38227	11
SURFACE TENSION	19.29	20	18.80	11
VISCOSITY (CS)	.5570	20		

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	-40.4	-9.1		14.9	34.1	69.8	90.0	21

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	7.0284	-1317.78	227.86		1.05	10.
EQUATION 2	57.022	-5958.0	-5.77	1.2158	-.42	40.

FLASH POINT(DEG C)	(CC)	REF	(OC)	REF
	-14.	20(AY)		

FLAMMABLE LIMITS	LOWER		UPPER	
	VOL PER	REF	VOL PER	REF
	1.0	8(DD)	7.0	8(DD)

AUTOIGNITION TEMPERATURE
    DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                          STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

3-METHYLHEXANE

SYNONYMS.
FORMULA= C7H16   C/H= 5.213   MW= 100.206   VD= 3.4554

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	1066.39	10642.	11
	(GROSS)	1150.55	11482.	11
HEAT OF VAPORIZATION(25 C)		8.38	83.68	11

----

	20 C	REF	25 C	REF
DENSITY (GRAM/ML)	.68713	11	.68295	11
REFRACTIVE INDEX	1.38864	11	1.38609	11
SURFACE TENSION	19.79	20	19.30	11
VISCOSITY (CS)	.541	(8)(61)		

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	-39.0	-7.8		16.4	35.6	71.6	91.9	21

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	6.9647	-1291.40	224.40		.59	10.
EQUATION 2	64.817	-6313.8	-6.94	8.0125	.12	400.

FLASH POINT(DEG C)	(CC)	REF	(OC)	REF
	-4.	(8)(9)		
	-14.	20(AY)		

FLAMMABLE LIMITS   LOWER   UPPER
                VOL PER   REF   VOL PER   REF
                  1.0   8(DD)   7.0   8(DD)

AUTOIGNITION TEMPERATURE
        DEG C   DELAY(SEC)   REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                          STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

2,2-DIMETHYLPENTANE

SYNONYMS.
FORMULA= C7H16   C/H= 5.213 MW= 100.206 VD= 3.4554

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF LIQUID   (NET)   1063.69   10615.   11
                      (GROSS)   1147.85   11455.   11
HEAT OF VAPORIZATION(25 C)   7.75   77.35   11
----
                      20 C   REF   25 C   REF
DENSITY (GRAM/ML) .67385   11   .66953   11
REFRACTIVE INDEX 1.38215   11   1.37955   11
SURFACE TENSION   18.02   20   17.55   11
VISCOSITY (CS)   .5773   20

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   -49.0 -18.7   5.0   23.9   59.2   79.2   21

 VAPOR PRESSURE EQUATION COEFFICIENTS
          A   B   C   D   MAX ERR AT P
EQUATION 1   6.8816 -1224.77   226.97   .21   10.
EQUATION 2 66.707   -6075.5   -7.32   13.4566   -.13 400.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                     -25.   20(AY)

FLAMMABLE LIMITS   LOWER   UPPER
               VOL PER   REF   VOL PER   REF
                 1.0   8(DD)   7.0   8(DD)

AUTOIGNITION TEMPERATURE
     DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL
     34.8   (63)   2244   (7)   2.13   (73)
                         STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

30

2,3-DIMETHYLPENTANE

SYNONYMS. DIETHYLDIMETHYLMETHANE
FORMULA= C7H16   C/H= 5.213 MW= 100.206 VD= 3.4554

```
-------------------------------------------------------------------------
HEAT OF COMBUSTION                 KCAL/MOLE        CAL/GRAM    REF
OF LIQUID              (NET)        1064.93          10627.     11
                      (GROSS)       1149.09          11467.     11
HEAT OF VAPORIZATION(25 C)            8.18            81.67     11
-------------------------------------------------------------------------
                      20 C     REF        30 C     REF
DENSITY (GRAM/ML)    .69508    11        .68673    20
REFRACTIVE INDEX     1.39196   11        1.38696   20
SURFACE TENSION      19.94    (8)(60)    18.98     20
VISCOSITY (CS)        .584    (8)(61)    .600      20
-------------------------------------------------------------------------
VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P     1      10      30      40      100     400     760       REF
T   -42.0  -10.3           13.9    33.3    69.4    89.8        21
-------------------------------------------------------------------------
 VAPOR PRESSURE EQUATION COEFFICIENTS
                A         B          C          D      MAX ERR AT P
EQUATION 1   7.0385   -1336.92   231.90                 1.27   10.
EQUATION 2   49.967   -5592.5     -4.74    -2.7402       -.56   40.
-------------------------------------------------------------------------
FLASH POINT(DEG C)   (CC)    REF             (OC)    REF
                     -16.    20(AY)
```

```
-------------------------------------------------------------------------
FLAMMABLE LIMITS   LOWER                      UPPER
               VOL PER    REF             VOL PER    REF
                1.1     3,6,12(A)           6.7     3,12(A)
                1.29    (7)(14)(H)          8.16    (7)(14)(H)
```

```
-------------------------------------------------------------------------
AUTOIGNITION TEMPERATURE
     DEC C   DELAY(SEC)   REF             DEG C    REF
     338.       6.0       49              337.     1,3,6
```

```
-------------------------------------------------------------------------
MAX FLAME VEL(CM/SEC)    FLAME TEMP(DEG K)      VOL PERCENT FUEL
     36.5  (69)             2220  (55)              2.22  (69)
                          STOICH  REF        ABS MIN  REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=
```

2,4-DIMETHYLPENTANE

SYNONYMS. DIISOPROPYLMETHANE
FORMULA= C7H16   C/H= 5.213 MW= 100.206 VD= 3.4554

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	1064.57	10624.	11
	(GROSS)	1148.73	11464.	11
HEAT OF VAPORIZATION(25 C)		7.86	78.44	11

---

	20 C	REF	30 C	REF
DENSITY (GRAM/ML)	.67270	11	.66393	20
REFRACTIVE INDEX	1.38145	11	1.37617	20
SURFACE TENSION	18.15	(8)(60)	17.17	20
VISCOSITY (CS)	.537	(8)(61)	.5351	20

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	-48.0	-17.1		6.5	25.4	60.6	80.5	21

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	7.0368	-1302.52	233.06		1.27	10.
EQUATION 2	49.470	-5430.9	-4.68	-2.9662	-.53	40.

FLASH POINT(DEG C)	(CC)	REF	(OC)	REF
	-12.	3,6	-12.	4
	-24.	20(AY)		

FLAMMABLE LIMITS	LOWER		UPPER	
	VOL PER	REF	VOL PER	REF
	1.1	4	6.7	4

AUTOIGNITION TEMPERATURE

DEG C	DELAY(SEC)	REF	DEG C	REF
338.		4		

MAX FLAME VEL(CM/SEC)	FLAME TEMP(DEG K)	VOL PERCENT FUEL
35.7 (69)	2236 (55)	2.17 (69)
	STOICH REF	ABS MIN REF

MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

3,3-DIMETHYLPENTANE

SYNONYMS.
FORMULA= C7H16   C/H= 5.213   MW= 100.206   VD= 3.4554

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF LIQUID   (NET)   1064.67   10625.   11
                     (GROSS)   1148.83   11465.   11
HEAT OF VAPORIZATION(25 C)   7.89   78.76   11
----
                    20 C   REF   25 C   REF
DENSITY (GRAM/ML) .69327   11   .68908   11
REFRACTIVE INDEX   1.39092   11   1.38842   11
SURFACE TENSION   19.59   20   19.10   11
VISCOSITY (CS)   .655   (8)(61)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   -45.9   -14.4   9.9   29.3   65.5   86.1   21

 VAPOR PRESSURE EQUATION COEFFICIENTS
              A   B   C   D   MAX ERR AT P
EQUATION 1   6.9650   -1301.64   232.75   .87   10.
EQUATION 2   50.722   -5489.5   -4.90   .0533   -.26   40.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                      -18.   20(AY)

FLAMMABLE LIMITS   LOWER   UPPER
               VOL PER   REF   VOL PER   REF
               1.0   8(DD)   7.0   8(DD)

AUTOIGNITION TEMPERATURE
        DEG C   DELAY(SEC)   REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL
     35.3   (63)   2.13   (73)
                          STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

3-ETHYLPENTANE

SYNONYMS.
FORMULA= C7H16   C/H= 5.213 MW= 100.206 VD= 3.4554

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	1066.97	10648.	11
	(GROSS)	1151.13	11488.	11
HEAT OF VAPORIZATION(25 C)		8.42	84.02	11

----

	20 C	REF	25 C	REF
DENSITY (GRAM/ML)	.69816	11	.69395	11
REFRACTIVE INDEX	1.39339	11	1.39084	11
SURFACE TENSION	20.44	20	19.94	11
VISCOSITY (CS)	.540	(8)(61)		

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	-37.8	-6.8		17.5	36.9	73.0	93.5	21

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	6.8794	-1253.45	220.00		-.15	400.
EQUATION 2	76.207	-6812.4	-8.65	18.7585	-.29	400.

FLASH POINT(DEG C)	(CC)	REF	(OC)	REF
	-14.	20(AY)		

FLAMMABLE LIMITS	LOWER		UPPER	
	VOL PER	REF	VOL PER	REF
	1.0	8(DD)	7.0	8(DD)

AUTOIGNITION TEMPERATURE
      DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                         STOICH REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

2,2,3-TRIMETHYLBUTANE

SYNONYMS. TRIPTANE
FORMULA= C7H16   C/H= 5.213 MW= 100.206 VD= 3.4554

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	1064.11	10619.	11
	(GROSS)	1148.27	11459.	11
HEAT OF VAPORIZATION(25 C)		7.66	76.41	11

---

	20 C	REF	25 C	REF
DENSITY (GRAM/ML)	.69011	11	.68588	11
REFRACTIVE INDEX	1.38944	11	1.38692	11
SURFACE TENSION	18.76	20	18.26	11
VISCOSITY (CS)	.868	(8)(61)		

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	-49.3	-18.8	-.2		24.5		80.9	20

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	6.7870	-1198.36	225.87		.15	100.
EQUATION 2	73.576	-6295.2	-8.40	23.7257	.05	30.

FLASH POINT(DEG C)	(CC)	REF	(OC)	REF
	-22.	20(AY)		

FLAMMABLE LIMITS	LOWER		UPPER	
	VOL PER	REF	VOL PER	REF
	1.0	8(DD)	7.0	8(DD)

AUTOIGNITION TEMPERATURE

DEG C	DELAY(SEC)	REF	DEG C	REF
454.	18.0	49		

MAX FLAME VEL (CM/SEC)	FLAME TEMP(DEG K)	VOL PERCENT FUEL
35.9 (69)	2242 (55)	2.15 (69)
	STOICH REF	ABS MIN REF

MIN IGN ENERGY(MILLIJOULE)= 1.00   (7)(57)
QUENCHING DISTANCE(CM)=   .36   7

OCTANE

SYNONYMS. OCTYL HYDRIDE
FORMULA= C8H18   C/H= 5.296 MW= 114.233 VD= 3.9391

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	1212.85	10617.	11
	(GROSS)	1307.53	11446.	11
HEAT OF VAPORIZATION(25 C)		9.92	86.80	11

---

	20 C	REF	25 C	REF	37.78 C	REF
DENSITY (GRAM/ML)	.70252	11	.69849	11		
REFRACTIVE INDEX	1.39743	11	1.39505	11		
SURFACE TENSION	21.62	(8)(60)	21.26	11		
VISCOSITY (CS)	.7758	(8)(60)			.6476	11

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	-14.0	19.2		45.1	65.7	104.0	125.6	21

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	6.9649	-1378.10	211.86		.15	10.
EQUATION 2	82.287	-7824.5	-9.37	21.6945	-.19	400.

FLASH POINT(DEG C)	(CC)	REF	(OC)	REF
	15.5	1	22.	(8)(9)(L)
	13.5	3,4		

FLAMMABLE LIMITS	LOWER			UPPER	
	VOL PER	REF		VOL PER	REF
	.84 AT 80 C	14(U)	7.0 AT 80 C	14(U)	
	.8	4		3.2	1,4
	.96	(8)(15)			
	1.0	1,3,12(A)			
	1.12	(17)(77)			

AUTOIGNITION TEMPERATURE

DEG C	DELAY(SEC)	REF	DEG C	REF
232.		1	220.	3,4
240.	54.0	49	458.	40(N)
218.	70.	54(AX)		
208.	107.	54(B,AX)		

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

STOICH REF   ABS MIN   REF

MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

2-METHYLHEPTANE

SYNONYMS. ISOOCTANE
FORMULA= C8H18   C/H= 5.296 MW= 114.233 VD= 3.9391

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF LIQUID   (NET)   1211.60   10606.   11
                     (GROSS)   1306.28   11435.   11
HEAT OF VAPORIZATION(25 C)   9.48   83.01   11
----
                     20 C   REF   25 C   REF
DENSITY (GRAM/ML)   .69792   11   .69392   11
REFRACTIVE INDEX   1.39494   11   1.39257   11
SURFACE TENSION   20.60   20   20.14   11
VISCOSITY (CS)   .744   (8)(61)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T -21.0   12.3   37.9   58.3   96.2   117.6   21

  VAPOR PRESSURE EQUATION COEFFICIENTS
               A   B   C   D   MAX ERR AT P
EQUATION 1   7.0555   -1415.55   221.60   .82   10.
EQUATION 2   62.985   -6739.7   -6.56   5.0460   -.27   40.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
              VOL PER   REF   VOL PER   REF
               0.98   (8)(15)

AUTOIGNITION TEMPERATURE
       DEG C   DELAY(SEC)   REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                         STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

37

3-METHYLHEPTANE

SYNONYMS.
FORMULA= C8H18   C/H= 5.296 MW= 114.233 VD= 3.9391

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF LIQUID   (NET)   1212.24   10612.   11
                      (GROSS)   1306.92   11441.   11
HEAT OF VAPORIZATION(25 C)   9.52   83.34 11
----
                      20 C   REF   25 C   REF
DENSITY (GRAM/ML) .70582   11   .70175   11
REFRACTIVE INDEX 1.39848 11   1.39610 11
SURFACE TENSION   21.17   20   20.70   11
VISCOSITY (CS)   .721   (8)(61)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T -19.8   13.3   38.9   59.4   97.4   118.9   21

  VAPOR PRESSURE EQUATION COEFFICIENTS
              A   B   C   D   MAX ERR AT P
EQUATION 1 6.9816 -1377.47 217.08   .57   10.
EQUATION 2 72.249 -7184.1   -7.93   13.1532   -.27   40.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                     6.   20(AY)

FLAMMABLE LIMITS   LOWER   UPPER
              VOL PER   REF   VOL PER   REF
               0.98   8(DD)

AUTOIGNITION TEMPERATURE
        DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                          STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

38

4-METHYLHEPTANE

SYNONYMS.
FORMULA= C8H18   C/H= 5.296   MW= 114.233   VD= 3.9391

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	1212.41	10614.	11
	(GROSS)	1307.09	11442.	11
HEAT OF VAPORIZATION(25 C)		9.48	83.01	11

---

	20 C	REF	25 C	REF
DENSITY (GRAM/ML)	.70463	11	.70055	11
REFRACTIVE INDEX	1.39792	11	1.39553	11
SURFACE TENSION	21.00	20	20.54	11
VISCOSITY (CS)	.678	(8)(61)		

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	-20.4	12.4		38.0	58.3	96.3	117.7	21

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	6.9406	-1350.37	214.95		-.30	100.
EQUATION 2	77.620	-7405.0	-8.73	18.0668	.14	40.

FLASH POINT(DEG C)	(CC)	REF	(OC)	REF
	6.	20(AY)		

FLAMMABLE LIMITS	LOWER		UPPER	
	VOL PER	REF	VOL PER	REF
	0.98	8(DD)		

AUTOIGNITION TEMPERATURE
      DEG C   DELAY(SEC)   REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                              STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

2,2-DIMETHYLHEXANE

SYNONYMS.
FORMULA= C8H18   C/H= 5.296 MW= 114.233 VD= 3.9391

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	1209.96	10592.	11
	(GROSS)	1304.64	11421.	11
HEAT OF VAPORIZATION(25 C)		8.91	78.02	11

---

	20 C	REF	25 C	REF
DENSITY (GRAM/ML)	.69528	11	.69112	11
REFRACTIVE INDEX	1.39349	11	1.39104	11
SURFACE TENSION	19.60	20	19.14	11
VISCOSITY (CS)				

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	-29.7	3.1		28.2	48.2	85.6	106.8	21

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	7.0314	-1380.45	225.98		1.24	10.
EQUATION 2	53.715	-6086.2	-5.23	-4.1481	.37	10.

FLASH POINT(DEG C)	(CC)	REF	(OC)	REF
	-3.	20(AY)		

FLAMMABLE LIMITS	LOWER			UPPER	
	VOL PER	REF		VOL PER	REF
	0.98	8(DD)			

AUTOIGNITION TEMPERATURE

DEG C	DELAY(SEC)	REF		DEG C	REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                         STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

2,3-DIMETHYLHEXANE

SYNONYMS.
FORMULA= C8H18   C/H= 5.296 MW= 114.233   VD= 3.9391

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	1212.18	10612.	11
	(GROSS)	1306.86	11440.	11
HEAT OF VAPORIZATION(25 C)		9.27	81.16	11

---

	20 C	REF	25 C	REF
DENSITY (GRAM/ML)	.71214	11	.70809	11
REFRACTIVE INDEX	1.40113	11	1.39880	11
SURFACE TENSION	20.99	20	20.53	11
VISCOSITY (CS)				

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	-23.0	9.9		35.6	56.0	94.1	115.6	21

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	6.9386	-1354.19	218.16		-.19	100.
EQUATION 2	73.657	-7123.9	-8.18	17.5210	-.14	10.

FLASH POINT(DEG C)	(CC)	REF	(OC)	REF
	45.	1	7.	3

NOTE-- 45 F IS 7 C

FLAMMABLE LIMITS	LOWER			UPPER	
	VOL PER	REF		VOL PER	REF
	0.98	8(DD)			

AUTOIGNITION TEMPERATURE

DEG C	DELAY(SEC)	REF	DEG C	REF
438.		3	438.	46

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

STOICH REF   ABS MIN REF

MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

2,4-DIMETHYLHEXANE

SYNONYMS.
FORMULA= C8H18   C/H= 5.296   MW= 114.233   VD= 3.9391

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	1211.12	10602.	11
	(GROSS)	1305.80	11431.	11
HEAT OF VAPORIZATION(25 C)		9.03	79.01	11

----

	20 C	REF	25 C	REF
DENSITY (GRAM/ML)	.70036	11	.69620	11
REFRACTIVE INDEX	1.39534	11	1.39291	11
SURFACE TENSION	20.05	20	19.59	11
VISCOSITY (CS)				

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	-26.9	5.2		30.5	50.6	88.2	109.4	21

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	6.8605	-1292.13	215.25		-.19	10.
EQUATION 2	82.990	-7415.5	-9.60	26.0992	-.30	10.

FLASH POINT(DEG C)	(CC)	REF	(OC)	REF
	10.	1	10.	3,4
	-2.	20(AY)		

FLAMMABLE LIMITS   LOWER   UPPER
                VOL PER   REF   VOL PER   REF
                 0.98   8(DD)

AUTOIGNITION TEMPERATURE
     DEG C   DELAY(SEC)   REF   DEG C   REF
     438.   4

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                         STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

2,5-DIMETHYLHEXANE

SYNONYMS. DIISOBUTYL
FORMULA= C8H18   C/H= 5.296 MW= 114.233 VD= 3.9391

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF LIQUID   (NET)   1210.32   10595.   11
                      (GROSS)   1305.00   11424.   11
HEAT OF VAPORIZATION(25 C)   9.05   79.21   11
----
                      20 C   REF   30 C   REF
DENSITY (GRAM/ML)   69354   11   .68513   20
REFRACTIVE INDEX   1.39246   11   1.38740   20
SURFACE TENSION   19.73   (9)(60) 18.82   20
VISCOSITY (CS)   .699   (8)(61) .6305   20

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T -26.7   5.3   30.4   50.5   87.9   109.1   21

 VAPOR PRESSURE EQUATION COEFFICIENTS
             A   B   C   D   MAX ERR AT P
EQUATION 1   6.8534 -1283.37   213.96   -.14   40.
EQUATION 2   83.520 -7459.7   -9.67   24.1634   -.29   400.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                       1.   20(AY)

FLAMMABLE LIMITS   LOWER   UPPER
              VOL PER   REF   VOL PER   REF
               0.98   8(DD)

AUTOIGNITION TEMPERATURE
      DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                            STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

43

3,3-DIMETHYLHEXANE

SYNONYMS.
FORMULA= C8H18   C/H= 5.296   MW= 114.233   VD= 3.9391

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF LIQUID   (NET)   1211.00   10601.   11
                      (GROSS)   1305.68   11430.   11
HEAT OF VAPORIZATION(25 C)   8.97   78.53   11
----
                      20 C   REF   25 C   REF
DENSITY (GRAM/ML)   .71000   11   .70596   11
REFRACTIVE INDEX   1.40009 11   1.39782 11
SURFACE TENSION   20.63   20   20.18   11
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   -25.8   6.!   31.7   52.5   90.4   112.0   21

 VAPOR PRESSURE EQUATION COEFFICIENTS
              A   B   C   D   MAX ERR AT P
EQUATION 1   6.7202   -1236.50   209.85   1.63   100.
EQUATION 2   104.398 -8325.8   -12.84   54.4458   -1.31 400.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
                VOL PER   REF   VOL PER   REF
                 0.98   8(DD)

AUTOIGNITION TEMPERATURE
      DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                         STOICH REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

3,4-DIMETHYLHEXANE

SYNONYMS.
FORMULA= C8H18   C/H= 5.296   MW= 114.233   VD= 3.9391

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF LIQUID   (NET)   1212.36   10613.   11
                      (GROSS)   1307.04   11442.   11
HEAT OF VAPORIZATION(25 C)   9.31   81.54   11
----
                      20 C   REF   25 C   REF
DENSITY (GRAM/ML) .71923   11   .71516   11
REFRACTIVE INDEX 1.40406   11   1.40180   11
SURFACE TENSION   21.64   20   21.18   11
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   -22.1   11.3   37.1   57.7   96.0   117.7   21

  VAPOR PRESSURE EQUATION COEFFICIENTS
               A   B   C   D   MAX ERR AT P
EQUATION 1   6.9908   -1392.96   221.33   .68   10.
EQUATION 2   64.347   -6738.0   -6.79   7.8702   -.23   40.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                       4.   20(AY)

FLAMMABLE LIMITS   LOWER   UPPER
                VOL PER   REF   VOL PER   REF
                 0.98   8(DD)

AUTOIGNITION TEMPERATURE
        DEG C   DELAY(SEC)   REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                          STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

3-ETHYLHEXANE

SYNONYMS.
FORMULA= C8H18   C/H= 5.296 MW= 114.233 VD= 3.9391

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF LIQUID   (NET)   1212.71   10616.   11
                      (GROSS)   1307.39   11445.   11
HEAT OF VAPORIZATION(25 C)   9.48   82.94   11
----
                      20 C   REF   25 C   REF
DENSITY (GRAM/ML) .71358   11   .70948   11
REFRACTIVE INDEX 1.40162   11   1.39919 11
SURFACE TENSION   21.51   20   21.04   11
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   -20.0   12.8   38.5   58.9   97.0   118.5   21

VAPOR PRESSURE EQUATION COEFFICIENTS
              A   B   C   D   MAX ERR AT P
EQUATION 1   6.9176   -1342.37   214.05   -.09 100.
EQUATION 2   80.644   -7541.9   -9.19   21.9950   -.21 10.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                     -4.   20(AY)

FLAMMABLE LIMITS   LOWER   UPPER
              VOL PER   REF   VOL PER   REF
              0.98   8(DD)

AUTOIGNITION TEMPERATURE
        DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                        STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

2,2,3-TRIMETHYLPENTANE

SYNONYMS.
FORMULA= C8H18   C/H= 5.296   MW= 114.233   VD= 3.9391

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	1211.15	10602.	11
	(GROSS)	1305.83	11431.	11
HEAT OF VAPORIZATION(25 C)		8.82	77.24	11

---

	20 C	REF	25 C	REF
DENSITY (GRAM/ML)	.71602	11	.71207	11
REFRACTIVE INDEX	1.40295	11	1.40066	11
SURFACE TENSION	20.67	20	20.22	11
VISCOSITY (CS)	.865	(8)(61)		

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	-29.0	3.9		29.5	49.9	88.2	109.8	21

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	6.8953	-1332.99	222.30		.54	10.
EQUATION 2	65.966	-6578.9	-7.10	11.9599	.12	400.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS	LOWER		UPPER	
	VOL PER	REF	VOL PER	REF
	1.0	8(DD)		

AUTOIGNITION TEMPERATURE

DEG C	DELAY(SEC)	REF	DEG C	REF
436.	24.0	49		

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                                STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

47

2,2,4-TRIMETHYLPENTANE

SYNONYMS. ISOOCTANE
FORMULA= C8H18   C/H= 5.296   MW= 114.233   VD= 3.9391

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	1210.61	10598.	11
	(GROSS)	1305.29	11427.	11
HEAT OF VAPORIZATION(25 C)		8.40	73.50	11

---

	20 C	REF	25 C	REF	40 C	REF
DENSITY (GRAM/ML)	.69193	11	.68781	11		
REFRACTIVE INDEX	1.39145	11	1.38898	11		
SURFACE TENSION	18.77	20	18.32	11	16.99	20
VISCOSITY (CS)	.7259	20			.5958	20

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	-36.5	-4.3		20.7	40.7	78.0	99.2	21

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	6.9092	-1309.92	226.07		.59	10.
EQUATION 2	61.270	-6172.7	-6.44	8.3540	-.18	40.

FLASH POINT(DEG C)	(CC)	REF	(OC)	REF
	-12.	3,4		
			4.5	(8)(9)(L)

FLAMMABLE LIMITS

	LOWER			UPPER	
	VOL PE.	REF		VOL PER	REF
	.85 AT 50 C	14(U)	5.95	AT 50 C	14(U)
	1.1	3,4,12(A)	6.0		3,4
	1.15	(17)(77)			

AUTOIGNITION TEMPERATURE

DEG C	DELAY(SEC)	REF	DEG C	REF
434.	20.	54(AX)		
283.	15.	54(B,AX)		
515.		50	561.	40(N)
447.	12.0	49	467.	74
529.		46	518.	51

MAX FLAME VEL(CM/SEC)	FLAME TEMP(DEG K)	VOL PERCENT FUEL
34.6 (63)	2233 (7)	1.90 (73)

	STOICH	REF	ABS MIN	REF
MIN IGN ENERGY(MILLIJOULE)=	.29	(7)(57)(BB)	.28	(7)(58)
QUENCHING DISTANCE(CM)=	.20	7	.18	(7)(58)

48

2,3,3-TRIMETHYLPENTANE

SYNONYMS.
FORMULA= C8H18   C/H= 5.296 MW= 114.233 VD= 3.9391

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	1211.96	10610.	11
	(GROSS)	1306.64	11438.	11
HEAT OF VAPORIZATION(25 C)		8.89	77.87	11

---

	20 C	REF	25 C	REF
DENSITY (GRAM/ML)	.72619	11	.72232	11
REFRACTIVE INDEX	1.40750	11	1.40522	11
SURFACE TENSION	21.56	20	21.10	11
VISCOSITY (CS)				

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	-25.8	6.9		33.0	53.8	92.7	114.8	21

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	6.7395	-1270.10	214.28		-.66	10.
EQUATION 2	86.556	-7532.6	-10.18	35.7757	-.58	400.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS	LOWER		UPPER	
	VOL PER	REF	VOL PER	REF
	1.0	8(DD)		

AUTOIGNITION TEMPERATURE

DEG C	DELAY(SEC)	REF	DEG C	REF
430.	12.0	49		

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                         STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

2,3,4-TRIMETHYLPENTANE

SYNONYMS.
FORMULA= C8H18   C/H= 5.296   MW= 114.233   VD= 3.9391

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	1211.60	10606.	11
	(GROSS)	1306.28	11435.	11
HEAT OF VAPORIZATION(25 C)		9.01	78.89	11

----

	20 C	REF	25 C	REF
DENSITY (GRAM/ML)	.71906	11	.71503	11
REFRACTIVE INDEX	1.40422	11	1.40198	11
SURFACE TENSION	21.14	20	20.68	11
VISCOSITY (CS)				

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	-26.3	7.1		32.9	53.4	91.8	113.5	21

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	6.9834	-1388.78	225.14		.80	10.
EQUATION 2	58.186	-6326.5	-5.91	3.7712	.18	400.

FLASH POINT(DEG C)	(CC)	REF	(OC)	REF
	5.	(8)(9)(J)		
	2.	20(AY)		

FLAMMABLE LIMITS	LOWER		UPPER	
	VOL PER	REF	VOL PER	REF
	1.0	8(DD)		

AUTOIGNITION TEMPERATURE
    DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                         STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

2-METHYL-3-ETHYLPENTANE

SYNONYMS.
FORMULA= C8H18   C/H= 5.296 MW= 114.233 VD= 3.9391

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF LIQUID   (NET)   1212.90   10618.   11
                          (GROSS) 1307.58   11447.   11
HEAT OF VAPORIZATION(25 C)   9.21   80.60   11
----
                         20 C   REF   25 C   REF
DENSITY (GRAM/ML) .71932   11   .71522   11
REFRACTIVE INDEX 1.40401   11   1.40167   11
SURFACE TENSION   21.52   20   21.05   11
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   -24.0   9.5   35.2   55.7   94.0   115.6   21

 VAPOR PRESSURE EQUATION COEFFICIENTS
               A   B   C   D   MAX ERR AT P
EQUATION 1   7.0217 -1407.20   224.37   1.08   10.
EQUATION 2 57.503   -6382.4   -5.78   1.0623   .36   10.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                       3.   20(AY)

FLAMMABLE LIMITS   LOWER   UPPER
                 VOL PER   REF   VOL PER   REF
                  0.98   8(DD)

AUTOIGNITION TEMPERATURE
     DEG C   DELAY(SEC)   REF   DEG C   REF
     461.   46

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                            STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

51

3-METHYL-3-ETHYLPENTANE

SYNONYMS.
FORMULA= C8H18   C/H= 5.296   MW= 114.233   VD= 3.9391

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF LIQUID   (NET)   1212.12   10611.   11
                      (GROSS)   1306.80   11440.   11
HEAT OF VAPORIZATION(25 C)   9.08   79.49   11
----
                      20 C   REF   25 C   REF
DENSITY (GRAM/ML)   .72742   11   .72354   11
REFRACTIVE INDEX   1.40775 11   1.40549 11
SURFACE TENSION   21.99   20   21.53   11
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   -23.9   9.9   36.2   57.1   96.2   118.3   21

 VAPOR PRESSURE EQUATION COEFFICIENTS
                A   B   C   D   MAX ERR AT P
EQUATION 1   6.9400   -1389.64   224.12   .43   10.
EQUATION 2   62.191   -6534.5   -6.52   10.7155   -.02   100.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                       6.   20(AY)

FLAMMABLE LIMITS   LOWER   UPPER
                    VOL PER   REF   VOL PER   REF
                     0.98   8(DD)

AUTOIGNITION TEMPERATURE
        DEG C   DELAY(SEC)   REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                              STOICH REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

52

2,2,3,3-TETRAMETHYLBUTANE

SYNONYMS.
FORMULA= C8H18   C/H= 5.296   MW= 114.233   VD= 3.9391

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	1207.56	10571.	11
	(GROSS)	1302.24	11400.	11
HEAT OF VAPORIZATION(25 C)		10.24	89.64	11

----

	20 C	REF	30 C	REF	110 C	REF
DENSITY (GRAM/ML)			.8188	20	.6485	2
REFRACTIVE INDEX	1.4695	2				
SURFACE TENSION	21.14	20	20.22	20		
VISCOSITY (CS)	.634(CP)	(8)(61)				

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	-17.4	13.5		36.8	54.8	87.4	106.3	21

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	7.6748	-1573.95	222.44		-1.63	400.
EQUATION 2	50.115	-6634.3	-4.36	-19.1374	-.63	400.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
                VOL PER   REF   VOL PER   REF
                  1.0   8(DD)

AUTOIGNITION TEMPERATURE
        DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                         STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

53

NONANE

SYNONYMS. NONYL HYDRIDE
FORMULA= C9H20   C/H= 5.362 MW= 128.260 VD= 4.4227

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	1358.60	10593.	11
	(GROSS)	1463.80	11413.	11
HEAT OF VAPORIZATION(25 C)		11.10	86.54	11
----
	20 C	REF	25 C	REF	37.78 C	REF
DENSITY (GRAM/ML)	.71763	11	.71381	11		
REFRACTIVE INDEX	1.40542	11	1.40311	11		
SURFACE TENSION	22.85	(8)(60)	22.44	11		
VISCOSITY (CS)	.9948	(8)(60)			.8087	11

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P	1	10	30	40	100	400	760	REF
T	1.4	38.0		66.0	88.1	128.2	150.8	21

VAPOR PRESSURE EQUATION COEFFICIENTS
	A	B	C	D	MAX ERR	AT P
EQUATION 1	7.3798	-1720.17	231.68		-.48	400.
EQUATION 2	50.770	-6735.7	-4.67	4.5780	.41	100.

FLASH POINT(DEG C)	(CC)	REF	(OC)	REF
	31.	1,3,4	30.	(8)(9)(L)

FLAMMABLE LIMITS   LOWER   UPPER
	VOL PER	REF	VOL PER	REF
	.76 AT 80 C	14(U)	6.5 AT 80 C	14(U)
	.74	1,4	2.9	1,3,4
	.8	3,6		
	.87	(8)(15)(K)		

AUTOIGNITION TEMPERATURE
DEG C	DELAY(SEC)	REF	DEG C	REF
285.		1,(22)(47)	206.	3,4
234.	66.0	49		

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                        STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

54

2-METHYLOCTANE

SYNONYMS.
FORMULA= C9H20   C/H= 5.362 MW= 128.260 VD= 4.4227

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	1357.26	10582.	11
	(GROSS)	1462.46	11402.	11
HEAT OF VAPORIZATION(25 C)		10.67	83.19	11

---

	20 C	REF	25 C	REF
DENSITY (GRAM/ML)	.7134	11	.7095	11
REFRACTIVE INDEX	1.4031	11	1.4008	11
SURFACE TENSION	21.88	20	21.41	11
VISCOSITY (CS)				

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	-2.5	32.2	53.1	.	81.0		143.3	20

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	6.9908	-1454.44	210.56		.54	100.
EQUATION 2	91.413	-8547.9	-10.68	41.5067	-.18	30.

FLASH POINT(DEG C)	(CC)	REF	(OC)	REF
	32.	20(AY)		

FLAMMABLE LIMITS	LOWER		UPPER	
	VOL PER	REF	VOL PER	REF
	0.85	8(DD)		

AUTOIGNITION TEMPERATURE

DEG C	DELAY(SEC)	REF	DEG C	REF
227.	66.0	49		

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                          STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

3-METHYLOCTANE

SYNONYMS.
FORMULA= C9H20   C/H= 5.362 MW= 128.260 VD= 4.4227

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	1357.95	10587.	1!
	(GROSS)	1463.15	11408.	11
HEAT OF VAPORIZATION(25 C)		10.69	83.35	11

---

	20 C	REF	25 C	REF
DENSITY (GRAM/ML)	.7205	11	.7168	11
REFRACTIVE INDEX	1.4063	11	1.4040	11
SURFACE TENSION	22.34	20	21.87	11
VISCOSITY (CS)				

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	-2.1	33.0	53.7		81.0		144.2	20

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	6.9828	-1451.55	209.91		1.66	10.
EQUATION 2	55.395	-6978.8	-5.29	-24.5585	-.29	30.

FLASH POINT(DEG C)	(CC)	REF	(OC)	REF

FLAMMABLE LIMITS	LOWER		UPPER	
	VOL PER	REF	VOL. PER	REF
	0.85	8(DD)		

AUTOIGNITION TEMPERATURE

DEG C	DELAY(SEC)	REF	DEG C	REF
228.	60.0	49		

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

	STOICH	REF	ABS MIN	REF

MIN IGN. ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

4-METHYLOCTANE

SYNONYMS.
FORMULA= C9H20   C/H= 5.362   MW= 128.260   VD= 4.4227

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	1358.04	10588.	11
	(GROSS)	1463.24	11408.	11
HEAT OF VAPORIZATION(25 C)		10.69	83.35	11

----

	20 C	REF	25 C	REF
DENSITY (GRAM/ML)	.7202	11	.7163	11
REFRACTIVE INDEX	1.4062	11	1.4039	11
SURFACE TENSION	22.34	20	21.87	11
VISCOSITY (CS)				

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	-2.8	32.0	52.5		80.0		142.5	20

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	6.9779	-1440.13	209.14		1.33	10.
EQUATION 2	70.568	-7641.2	-7.55	.9235	-.69	30.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS	LOWER		UPPER	
	VOL PER	REF	VOL PER	REF
	0.85	8(DD)		

'

AUTOIGNITION TEMPERATURE

DEG C	DELAY(SEC)	REF	DEG C	REF
232.	6.0	49		

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                        STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

2,2-DIMETHYLHEPTANE

SYNONYMS.
FORMULA= C9H20   C/H= 5.362 MW= 128.260 VD= 4.4227

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF LIQUID   (NET)   1355.33   10567.   11
                      (GROSS)   1460.53   11387.   11
HEAT OF VAPORIZATION(25 C)   10.10   78.75   11
----
                     20 C   REF   25 C   REF
DENSITY (GRAM/ML)   .7105   11   .7066   11
REFRACTIVE INDEX   1.4016   11   1.3993   11
SURFACE TENSION   20.80   20   20.34   11
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T -11.0   23.3   43.8   71.0   132.7   20

VAPOR PRESSURE EQUATION COEFFICIENTS
             A   B   C   D   MAX ERR AT P
EQUATION 1 6.9801 -1426.40   215.33   .61   10.
EQUATION 2 71.458 -7384.7   -7.77   12.5306   -.23   30.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
             VOL PER   REF   VOL PER   REF
              0.85   8(DD)

AUTOIGNITION TEMPERATURE
     DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                         STOICH REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

58

2,3-DIMETHYLHEPTANE

SYNONYMS.
FORMULA= C9H2O   C/H= 5.362 MW= 128.260 VD= 4.4227

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	1357.88	10587.	11
	(GROSS)	1463.08	11407.	11
HEAT OF VAPORIZATION(25 C)		10.46	81.55	11

	20 C	REF	25 C	REF
DENSITY (GRAM/ML)	.7260	11	.7221	11
REFRACTIVE INDEX	1.4085	11	1.4062	11
SURFACE TENSION	22.34	20	21.87	11
VISCOSITY (CS)				

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	-5.2	29.4	50.3		78.0		140.5	20

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	6.9483	-1429.55	210.94		-.23	30.
EQUATION 2	85.891	-8203.2	-9.89	32.4474	-.08	30.

FLASH POINT(DEG C)	(CC)	REF	(OC)	REF
	26.	20(AY)		

FLAMMABLE LIMITS	LOWER		UPPER	
	VOL PER	REF	VOL PER	REF

AUTOIGNITION TEMPERATURE
       DEG C   DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                              STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

59

2,5-DIMETHYLHEPTANE

SYNONYMS.
FORMULA= C9H20   C/H= 5.362 MW= 128.260 VD= 4.4227

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	1356.62	10577.	11
	(GROSS)	1461.82	11397.	11
HEAT OF VAPORIZATION(25 C)		10.25	79.92	11

---

	20 C	REF	25 C	REF
DENSITY (GRAM/ML)	.7167	11	.7127	11
REFRACTIVE INDEX	1.4038	11	1.4015	11
SURFACE TENSION	21.30	20	20.84	11
VISCOSITY (CS)				

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	-8.4	26.2	46.9		74.1		136.0	20

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	7.0304	-1461.17	216.21		-.63	100.
EQUATION 2	66.520	-7248.2	-7.02	5.7003	-.04	30.

FLASH POINT(DEG C)	(CC)	REF	(OC)	REF
	23.5	1		
	23.	20(AY)		

FLAMMABLE LIMITS	LOWER		UPPER	
	VOL PER	REF	VOL PER	REF

AUTOIGNITION TEMPERATURE
    DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                           STOICH REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

2,6-DIMETHYLHEPTANE

SYNONYMS.
FORMULA= C9H20   C/H= 5.362 MW= 128.260 VD= 4.4227

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	1355.92	10572.	11
	(GROSS)	1461.12	11392.	11
HEAT OF VAPORIZATION(25 C)		10.24	79.84	11

---

	20 C	REF	25 C	REF
DENSITY (GRAM/ML)	.7089	11	.7049	11
REFRACTIVE INDEX	1.4007	11	1.3983	11
SURFACE TENSION	20.83	20	20.38	11
VISCOSITY (CS)				

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	-8.8	25.5	46.2		73.3		135.2	20

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	6.9730	-1425.79	213.26		-.38	100.
EQUATION 2	75.587	-7644.4	-8.37	16.4512	.10	30.

FLASH POINT(DEG C)	(CC)	REF	(OC)	REF
	22.	20(AY)		

FLAMMABLE LIMITS	LOWER		UPPER	
	VOL PER	REF	VOL PER	REF
	0.85	8(DD)		

AUTOIGNITION TEMPERATURE
     DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                          STOICH REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

3,3-DIMETHYLHEPTANE

SYNONYMS.
FORMULA= C9H20   C/H= 5.362   MW= 128.260   VD= 4.4227

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	1356.52	10576.	11
	(GROSS)	1461.72	11397.	11
HEAT OF VAPORIZATION(25 C)		10.19	79.45	11

---

	20 C	REF	25 C	REF
DENSITY (GRAM/ML)	.7256	11	.7216	11
REFRACTIVE INDEX	1.4088	11	1.4063	11
SURFACE TENSION	22.01	20	21.55	11
VISCOSITY (CS)				

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	-8.4	26.0	46.9		74.0		137.3	20

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	6.8535	-1375.37	209.05		-1.28	100.
EQUATION 2	69.561	-7390.1	-7.47	-.4251	.60	30.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS	LOWER		UPPER	
	VOL PER	REF	VOL PER	REF

AUTOIGNITION TEMPERATURE

DEG C	DELAY(SEC)	REF	DEG C	REF
330.	3.6	49		

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

3,5-DIMETHYLHEPTANE

SYNONYMS.
FORMULA= C9H20   C/H= 5.362 MW= 128.260 VD= 4.4227

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	1357.31	10583.	11
	(GROSS)	1462.51	11403.	11
HEAT OF VAPORIZATION(25 C)		10.27	80.07	11

---

	20 C	REF	25 C	REF
DENSITY (GRAM/ML)	.7225	11	.7186	11
REFRACTIVE INDEX	1.4067	11	1.4044	11
SURFACE TENSION	21.77	20	21.31	11
VISCOSITY (CS)				

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	-8.0	26.0	46.6		73.9		136.0	20

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	6.8710	-1370.38	207.44		-.16	30.
EQUATION 2	89.811	-8314.2	-10.48	31.3867	-.03	30.

FLASH POINT(DEG C)	(CC)	REF	(OC)	REF
	23.5	1		

FLAMMABLE LIMITS	LOWER		UPPER	
	VOL PER	REF	VOL PER	REF

AUTOIGNITION TEMPERATURE

DEG C	DELAY(SEC)	REF	DEG C	REF

MAX FLAME VEL(CM/SEC)	FLAME TEMP(DEG K)		VOL PERCENT FUEL	
	STOICH	REF	ABS MIN	REF

MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

63

4,4-DIMETHYLHEPTANE

SYNONYMS.
FORMULA= C9H20   C/H= 5.362   MW= 128.260   VD= 4.4227

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF LIQUID   (NET)   1356.61   10577.   11
                      (GROSS)   1461.81   11397.   11
HEAT OF VAPORIZATION(25 C)   10.19   79.45   11
----
                      20 C   REF   25 C   REF
DENSITY (GRAM/ML) .7256   11   .7216   11
REFRACTIVE INDEX 1.4076   11   1.4053   11
SURFACE TENSION   22.01   20   21.55   11
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   -9.0   24.5   45.2   73.0   135.2   20

 VAPOR PRESSURE EQUATION COEFFICIENTS
            A   B   C   D   MAX ERR AT P
EQUATION 1   6.7389 -1303.67   202.50   1.60 100.
EQUATION 2 121.983 -9676.5   -15.31   80.3885   -.06   30.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                      23.5   1

FLAMMABLE LIMITS   LOWER   UPPER
                 VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
       DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                            STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

3-ETHYLHEPTANE

SYNONYMS.
FORMULA= C9H20   C/H= 5.362   MW= 128.260   VD= 4.4227

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	1358.73	10594.	11
	(GROSS)	1463.93	11414.	11
HEAT OF VAPORIZATION(25 C)		10.71	83.50	11

---

	20 C	REF	25 C	REF
DENSITY (GRAM/ML)	.7265	11	.7225	11
REFRACTIVE INDEX	1.4093	11	1.4070	11
SURFACE TENSION	22.81	20	22.34	11
VISCOSITY (CS)				

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	-2.6	32.0	52.7		80.3		143.0	20

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	6.9278	-1416.69	207.12		.74	10.
EQUATION 2	81.682	-8135.6	-9.22	17.6882	-.39	30.

FLASH POINT(DEG C)	(CC)	REF	(OC)	REF
	28.	20(AY)		

FLAMMABLE LIMITS	LOWER		UPPER	
	VOL PER	REF	VOL PER	REF
	0.85	8(DD)		

AUTOIGNITION TEMPERATURE
DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                         STOICH REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

4-ETHYLHEPTANE

SYNONYMS.
FORMULA= C9H2O   C/H= 5.362   MW= 128.260   VD= 4.4227

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	1358.82	10594.	11
	(GROSS)	1464.02	11414.	11
HEAT OF VAPORIZATION(25 C)		10.71	83.50	11

---

	20 C	REF	25 C	REF
DENSITY (GRAM/ML)	.7281	11	.7241	11
REFRACTIVE INDEX	1.4096	11	1.4073	11
SURFACE TENSION	22.81	20	22.34	11
VISCOSITY (CS)				

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	-3.4	31.0	51.4		79.0		141.2	20

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	6.9114	-1397.72	205.61		.95	10.
EQUATION 2	87.486	-8388.3	-10.07	24.1768	-.86	30.

FLASH POINT(DEG C)	(CC)	REF	(OC)	REF
	26.	20(AY)		

FLAMMABLE LIMITS	LOWER		UPPER	
	VOL PER	REF	VOL PER	REF

AUTOIGNITION TEMPERATURE

DEG C	DELAY(SEC)	REF	DEG C	REF

MAX FLAME VEL(CM/SEC)	FLAME TEMP(DEG K)		VOL PERCENT FUEL	
	STOICH	REF	ABS MIN	REF

MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

2,2,4-TRIMETHYLHEXANE

SYNONYMS.
FORMULA= C9H20   C/H= 5.362 MW= 128.260 VD= 4.4227

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF LIQUID   (NET)   1356.58   10577.   11
                     (GROSS)   1451.78   11397.   11
HEAT OF VAPORIZATION(25 C)   9.69   75.55   11
----
                     20 C   REF   25 C   REF
DENSITY (GRAM/ML) .7156   11   .7118   11
REFRACTIVE INDEX 1.4033   11   1.4010   11
SURFACE TENSION   20.51   20   20.09   11
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T -16.0   17.0   38.0   65.0   126.5   20

 VAPOR PRESSURE EQUATION COEFFICIENTS
             A   B   C   D   MAX ERR AT P
EQUATION 1   6.7779   -1309.23   209.23   -2.11   10.
EQUATION 2   112.068 -8958.7   -13.92   72.8683   1.59   30.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
               VOL PER   REF   VOL PER   REF
               0.85   8(DD)

AUTOIGNITION TEMPERATURE
     DEG C   DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                         STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

2,2,5-TRIMETHYLHEXANE

SYNONYMS.
FORMULA= C9H20   C/H= 5.362   MW= 128.260   VD= 4.4227

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	1354.00	10557.	11
	(GROSS)	1459.20	11377.	11
HEAT OF VAPORIZATION(25 C)		9.60	74.86	11

----

	20 C	REF	25 C	REF
DENSITY (GRAM/ML)	.70721	11	.70322	11
REFRACTIVE INDEX	1.39972	11	1.39728	11
SURFACE TENSION	20.04	20	19.60	11
VISCOSITY (CS)				

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	-18.2	16.2	36.4		63.1		124.1	20

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	7.0800	-1466.03	225.21		1.50	10.
EQUATION 2	44.906	-6001.7	-3.86	-18.2516	-.50	30.

FLASH POINT(DEG C)	(CC)	REF	(OC)	REF
	13.	1	13.	3

FLAMMABLE LIMITS	LOWER		UPPER	
	VOL PER	REF	VOL PER	REF
	0.85	8(DD)		

AUTOIGNITION TEMPERATURE
      DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                         STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

2,3,3-TRIMETHYLHEXANE

SYNONYMS.
FORMULA= C9H20   C/H= 5.362   MW= 128.260   VD= 4.4227

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	1357.31	10583.	11
	(GROSS)	1462.51	11403.	11
HEAT OF VAPORIZATION(25 C)		10.09	78.47	11

---

	20 C	REF	25 C	REF
DENSITY (GRAM/ML)	.7375	11	.7345	11
REFRACTIVE INDEX	1.4141	11	1.4119	11
SURFACE TENSION	22.41	20	21.95	11
VISCOSITY (CS)				

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	-9.0	25.0	46.0		74.0		137.7	20

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	6.6989	-1303.56	203.62		.79	100.
EQUATION 2	108.502	-9049.6	-13.31	62.8681	.22	30.

FLASH POINT(DEG C)	(CC)	REF	(OC)	REF
	26.	1		

FLAMMABLE LIMITS	LOWER			UPPER	
	VOL PER	REF		VOL PER	REF
	0.85	8(DD)			

AUTOIGNITION TEMPERATURE
    DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                         STOICH REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

2,3,4-TRIMETHYLHEXANE

SYNONYMS.
FORMULA= C9H20   C/H= 5.362 MW= 128.260 VD= 4.4227

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	1358.05	10588.	11
	(GROSS)	1463.25	11408.	11
HEAT OF VAPORIZATION(25 C)		10.26	79.99	11

----

	20 C	REF	25 C	REF
DENSITY (GRAM/ML)	.7392	11	.7354	11
REFRACTIVE INDEX	1.4144	11	1.4120	11
SURFACE TENSION	22.80	20	22.34	11
VISCOSITY (CS)				

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	-7.0	27.0	48.0		76.0		139.0	20

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	6.7674	-1334.80	204.28		1.16	100.
EQUATION 2	112.961	-9331.2	-13.95	70.6836	.20	30.

FLASH POINT(DEG C)	(CC)	REF	(OC)	REF
	27.	1		

FLAMMABLE LIMITS	LOWER		UPPER	
	VOL PER	REF	VOL PER	REF

AUTOIGNITION TEMPERATURE

DEG C	DELAY(SEC)	REF	DEG C	REF

MAX FLAME VEL(CM/SEC)	FLAME TEMP(DEG K)		VOL PERCENT FUEL	
	STOICH	REF	ABS MIN	REF

MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

2,3,5-TRIMETHYLHEXANE

SYNONYMS.
FORMULA= C9H20   C/H= 5.362 MW= 128.260 VD= 4.4227

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF LIQUID   (NET)   1356.36   10575.   11
                     (GROSS)   1461.56   11395.   11
HEAT OF VAPORIZATION(25 C)   9.90   77.19   11
----
                    20 C   REF   25 C   REF
DENSITY (GRAM/ML) .7219   11   .7179   11
REFRACTIVE INDEX 1.4061   11   1.4037   11
SURFACE TENSION   21.27   20   20.82   11
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   -12.9   21.0   42.0   69.0   131.3   20

 VAPOR PRESSURE EQUATION COEFFICIENTS
              A   B   C   D   MAX ERR AT P
EQUATION 1   6.8703 -1372.33 212.66   1.00   30.
EQUATION 2   82.512 -7787.6   -9.46   28.4998   1.11   30.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                                            13.   (8)(9)(L)

FLAMMABLE LIMITS   LOWER   UPPER
              VOL PER   REF   VOL PER   REF
               0.85   8(DD)

AUTOIGNITION TEMPERATURE
        DEG C   DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                         STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

71

2,4,4-TRIMETHYLHEXANE

SYNONYMS.
FORMULA= C9H20   C/H= 5.362 MW= 128.260 VD= 4.4227

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF LIQUID   (NET)   1357.07   10581.   11
                         (GROSS)   1462.27   11401.   11
HEAT OF VAPORIZATION(25 C)   9.76   76.10   11
----
                         20 C   REF   25 C   REF
DENSITY (GRAM/ML) .72381   11   .72007   11
REFRACTIVE INDEX   1.40745   11   1.40515   11
SURFACE TENSION   21.17   20   20.75   11
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   -14.2   19.9   40.6   68.1   130.7   20

 VAPOR PRESSURE EQUATION COEFFICIENTS
            A   B   C   D   MAX ERR AT P
EQUATION 1 6.8355 -1359.35   213.07   -.09   10.
EQUATION 2 83.846 -7784.3   -9.68   32.4450   .15   30.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
                VOL PER   REF   VOL PER   REF
                 0.85   8(DD)

AUTOIGNITION TEMPERATURE
        DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                        STOICH REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

72

3,3,4-TRIMETHYLHEXANE

SYNONYMS.
FORMULA= C9H20   C/H= 5.362 MW= 128.260 VD= 4.4227

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	1357.92	10587.	11
	(GROSS)	1463.12	11407.	11
HEAT OF VAPORIZATION(25 C)		10.11	78.82	11

---

	20 C	REF	25 C	REF
DENSITY (GRAM/ML)	.7454	11	.7414	11
REFRACTIVE INDEX	1.4178	11	1.4154	11
SURFACE TENSION	23.27	20	22.79	11
VISCOSITY (CS)				

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	-7.9	27.0	48.0		77.0		140.5	20

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	6.8403	-1397.23	212.20		2.08	100.
EQUATION 2	105.145	-8880.0	-12.84	74.9474	-1.10	30.

FLASH POINT(DEG C)	(CC)	REF	(OC)	REF
	26.	1		

FLAMMABLE LIMITS	LOWER			UPPER	
	VOL PER	REF		VOL PER	REF
	0.85	8(DD)			

AUTOIGNITION TEMPERATURE

DEG C	DELAY(SEC)	REF	DEG C	REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

STOICH REF   ABS MIN REF

MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

73

2,2,3,3-TETRAMETHYLPENTANE

SYNONYMS.
FORMULA= C9H20   C/H= 5.362 MW= 128.260 VD= 4.4227

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF LIQUID   (NET)   1357.90   10587.   11
                      (GROSS)   1463.10   11407.   11
HEAT OF VAPORIZATION(25 C)   9.80   76.41   11
----
                      20 C   REF   25 C   REF
DENSITY (GRAM/ML) .75666   11   .75299   11
REFRACTIVE INDEX   1.42360   11   1.42140 11
SURFACE TENSION   23.38   20   22.93   11
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   -10.3   26.1   47.4   75.7   140.3   20

 VAPOR PRESSURE EQUATION COEFFICIENTS
              A   B   C   D   MAX ERR AT P
EQUATION 1 7.0726 -1547.16 228.99   1.73   10.
EQUATION 2 36.684 -5740.6   -2.66   -25.7374   -.68   30.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
             VOL PER   REF   VOL PER   REF
               .8   3,4,12(A,GG)   4.9   3,4,12(A,GG)
               .84   (8)(15)(M)

AUTOIGNITION TEMPERATURE
    DEG C   DELAY(SEC) REF   DEG C   REF
    505.   51(AU)   516.   51(AT)
    452.   42.   49   430.   4

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                        STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

74

2,2,3,4-TETRAMETHYLPENTANE

SYNONYMS.
FORMULA= C9H20   C/H= 5.362 MW= 128.260 VD= 4.4227

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	1358.37	10591.	11
	(GROSS)	1463.57	11411.	11
HEAT OF VAPORIZATION(25 C)		9.80	76.41	11

---

	20 C	REF	25 C	REF
DENSITY (GRAM/ML)	.73895	11	.73524	11
REFRACTIVE INDEX	1.41472	11	1.41246	11
SURFACE TENSION	21.98	20	21.54	11
VISCOSITY (CS)				

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	-13.0	20.9	41.9		69.6		133.0	20

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	6.7101	-1303.57	207.30		-.81	10.
EQUATION 2	102.338	-8620.2	-12.44	57.7229	.48	30.

FLASH POINT(DEG C)	(CC)	REF	(OC)	REF

FLAMMABLE LIMITS	LOWER			UPPER	
	VOL PER	REF		VOL PER	REF
	0.85	8(DD)			

AUTOIGNITION TEMPERATURE
      DEG C   DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                           STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

2,2,4,4-TETRAMETHYLPENTANE

SYNONYMS.
FORMULA= C9H20   C/H= 5.362 MW= 128.260 VD= 4.4227

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF LIQUID   (NET)   1357.49   10584.   11
                     (GROSS)   1462.69   11404.   11
HEAT OF VAPORIZATION(25 C)   9.11   71.03   11
----
                     20 C   REF   25 C   REF
DENSITY (GRAM/.4L) .71947   11   .71563   11
REFRACTIVE INDEX 1.40694   11   1.40459   11
SURFACE TENSION   20.37   20   19.92   11
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T -24.7   12.5   33.0   60.1   122.3   20

 VAPOR PRESSURE EQUATION COEFFICIENTS
             A   B   C   D   MAX ERR AT P
EQUATION 1   7.5702 -1803.34   262.75   4.37 10.
EQUATION 2 -31.437 -2446.1   7.49 -103.9010   -1.52 30.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
                 VOL PER   REF   VOL PER   REF
                   0.85   8(DD)

AUTOIGNITION TEMPERATURE
        DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                              STOICH REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

2,3,3,4-TETRAMETHYLPENTANE

SYNONYMS.
FORMULA= C9H20   C/H= 5.362 MW= 128.260 VD= 4.4227

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	1358.02	10588.	11
	(GROSS)	1463.22	11408.	11
HEAT OF VAPORIZATION(25 C)		9.98	77.81	11

---

	20 C	REF	25 C	REF
DENSITY (GRAM/ML)	.75473	11	.75113	11
REFRACTIVE INDEX	1.42222	11	1.42003	11
SURFACE TENSION	23.31	20	22.88	11
VISCOSITY (CS)				

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	-8.4	27.2	48.6		77.0		141.5	20

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	6.9319	-1461.36	219.24		.47	10.
EQUATION 2	65.299	-7082.7	-6.91	13.2015	-.09	30.

FLASH POINT(DEG C)	(CC)	REF	(OC)	REF

FLAMMABLE LIMITS	LOWER		UPPER	
	VOL PER	REF	VOL PER	REF
	0.85	8(DD)		

AUTOIGNITION TEMPERATURE

DEG C	DELAY(SEC)	REF	DEG C	REF
437.	24.0	49	514.	51(AT)
497.		51(AU)		

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                        STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

2,2-DIMETHYL-3-ETHYLPENTANE

SYNONYMS.
FORMULA= C9H20   C/H= 5.362 MW= 128.260 VD= 4.4227

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	1357.52	10584.	11
	(GROSS)	1462.72	11404.	11
HEAT OF VAPORIZATION(25 C)		10.04	78.28	11

----

	20 C	REF	25 C	REF
DENSITY (GRAM/ML)	.7348	11	.7310	11
REFRACTIVE INDEX	1.4123	11	1.4102	11
SURFACE TENSION	22.38	20	21.92	11
VISCOSITY (CS)				

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	-10.9	22.0	43.0		71.0		133.8	20

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	6.5713	-1221.89	196.90		-2.42	10.
EQUATION 2	148.981	-10767.7	-19.38	120.5405	.89	30.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS	LOWER		UPPER	
	VOL PER.	REF	VOL PER	REF
	0.85	8(DD)		

AUTOIGNITION TEMPERATURE
    DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                         STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

2,4-DIMETHYL-3-ETHYLPENTANE

SYNONYMS.
FORMULA= C9H20   C/H= 5.362 MW= 128.260 VD= 4.4227

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	1358.14	10589.	11
	(GROSS)	1463.34	11409.	11
HEAT OF VAPORIZATION(25 C)		10.26	79.99	11

----

	20 C	REF	25 C	REF
DENSITY (GRAM/ML)	.7379	11	.7341	11
REFRACTIVE INDEX	1.4137	11	1.4115	11
SURFACE TENSION	22.80	20	22.34	11
VISCOSITY (CS)				

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	-8.4	24.0	45.0		73.0		136.7	20

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	6.4115	-1144.38	187.01		-2.69	10.
EQUATION 2	169.610	-11810.2	-22.41	139.5742	1.21	30.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS	LOWER		UPPER	
	VOL PER	REF	VOL PER	REF
	0.85	8(DD)		

AUTOIGNITION TEMPERATURE

DEG C	DELAY(SEC)	REF	DEG C	REF
390.	12.0	49	510.	51(AT)
472.		51(AU)		

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                        STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

3,3-DIETHYLPENTANE

SYNONYMS.
FORMULA= C9H20   C/H= 5.362 MW= 128.260 VC= 4.4227

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF LIQUID   (NET)   1358.81   10594.   11
                     (GROSS)   1464.01   11414.   11
HEAT OF VAPORIZATION(25 C)   10.36   80.77   11
----
                     20 C   REF   25 C   REF
DENSITY (GRAM/ML)   .75359   11   .75000   11
REFRACTIVE INDEX   1.42051   11   1.41837   11
SURFACE TENSION   23.75   20   23.29   11
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   -4.2   30.7   52.4   81.0   146.2   20

 VAPOR PRESSURE EQUATION COEFFICIENTS
            A   B   C   D   MAX ERR AT P
EQUATION 1   6.7372   -1357.63   205.75   -.98   10.
EQUATION 2   104.532 -8995.9   -12.71   65.3811   .54   30.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
                 VOL PER   REF   VOL PER   REF
                   .7   3,4   5.7   3,4

AUTOIGNITION TEMPERATURE
     DEG C DELAY(SEC)   REF   DEG C   REF
     322.   1   290.   3,4

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                         STOICH   REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

80

DECANE

SYNONYMS. DECYL HYDRIDE
FORMULA= C10H22   C/H= 5.416   MW= 142.287   VD= 4.9064

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	1504.34	10573.	11
	(GROSS)	1620.06	11386.	11
HEAT OF VAPORIZATION(25 C)		12.28	86.30	11

----

	20 C	REF	25 C	REF	37.78 C	REF
DENSITY (GRAM/ML)	.73005	11	.72625	11		
REFRACTIVE INDEX	1.41189	11	1.40967	11		
SURFACE TENSION	23.83	(8)(60)	23.37	11		
VISCOSITY (CS)	1.268	(8)(60)			1.004	11

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	17.1	55.4		84.6	108.0	149.9	173.0	21

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	7.4203	-1824.08	228.73		-.77	40.
EQUATION 2	61.872	-7665.7	-6.25	24.8797	-.65	40.

FLASH POINT(DEG C)	(CC)	REF	(OC)	REF
	46.	1,3,6	44.	(8)(9)(L)
	44.	4		

FLAMMABLE LIMITS	LOWER			UPPER	
	VOL PER	REF		VOL PER	REF
	.66 AT 80 C	14(U)	5.0 AT 80 C	14(U)	
	.7	1,4		2.6	1
	.78	(8)(15)(M)		5.4	3,4,6,8
	.8	3,6,12(A)			

AUTOIGNITION TEMPERATURE

DEG C	DELAY(SEC)	REF	DEG C	REF
250.		1,(22)(47)	208.	3,4
202.		(22)(23)(B)	463.	(22)(23)
425.		40(N)	236.	50
232.	54.0	49	253.	46

MAX FLAME VEL(CM/SEC)	FLAME TEMP(DEG K)	VOL PERCENT FUEL
40.2 (62)(P)	2287 (62)	1.40 (73)
	STOICH REF	ABS MIN REF

MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

81

2-METHYLNONANE

SYNONYMS.
FORMULA= C10H22   C/H= 5.416 MW= 142.287 VD= 4.9064

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF LIQUID   (NET)   1502.99   10563.   11
                           (GROSS)   1618.71   11376.   11
HEAT OF VAPORIZATION(25 C)
----
                    20 C   REF   30 C   REF
DENSITY (GRAM/ML) .7264   11   .7203   20
REFRACTIVE INDEX   1.4100   11   1.4053   20
SURFACE TENSION   22.21   20   21.27   20
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   13.5   50.4   72.4   101.3   166.8   20

 VAPOR PRESSURE EQUATION COEFFICIENTS
              A   B   C   D   MAX ERR AT P
EQUATION 1   7.0671   -1572.81   208.98   -.55   100.
EQUATION 2   72.886   -8185.9   -7.84   11.0682   .01   30.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
              VOL PER   REF   VOL PER   REF
              0.75   8(DD)

AUTOIGNITION TEMPERATURE
     DEG C   DELAY(SEC)   REF   DEG C   REF
     214.   102.0   49

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                          STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

82

3--METHYLNONANE

SYNONYMS.
FORMULA= C10H22   C/H= 5.416 MW= 142.287 VD= 4.9064

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	1503.67	10568.	11
	(GROSS)	1619.39	11381.	11

HEAT OF VAPORIZATION(25 C)

---

	20 C	REF	30 C	REF
DENSITY (GRAM/ML)	.7334	11	.7258	20
REFRACTIVE INDEX	1.4125	11	1.4080	20
SURFACE TENSION	22.86	20	21.93	20
VISCOSITY (CS)				

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	15.7	52.5	74.4		103.1		167.8	20

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	7.1490	-1609.48	209.36		-.53	100.
EQUATION 2	72.678	-8277.7	-7.77	10.1028	-.00	30.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
                VOL PER   REF   VOL PER   REF
                0.75   8(DD)

AUTOIGNITION TEMPERATURE
     DEG C   DELAY(SEC)   REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                                STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

4-METHYLNONANE

SYNONYMS.
FORMULA= C10H22   C/H= 5.416   MW= 142.287   VD= 4.9064

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	1503.78	10569.	11
	(GROSS)	1619.50	11382.	11

HEAT OF VAPORIZATION(25 C)

----

	20 C	REF	30 C	REF
DENSITY (GRAM/ML)	.7322	11	.7245	20
REFRACTIVE INDEX	1.4118	11	1.4076	20
SURFACE TENSION	22.72	20	21.77	20
VISCOSITY (CS)				

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	14.3	50.8	72.6		101.2		165.7	20

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	7.1322	-1593.06	209.09		-.51	100.
EQUATION 2	73.557	-8276.3	-7.91	10.8486	.01	10.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS	LOWER			UPPER	
	VOL PER	REF		VOL PER	REF
	0.75	8(DD)			

AUTOIGNITION TEMPERATURE
       DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                              STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

5-METHYLNONANE

SYNONYMS.
FORMULA= C10H22   C/H= 5.416 MW= 142.287 VD= 4.9064

HEAT OF COMBUSTICN   KCAL/MOLE   CAL/GRAM   REF
OF LIQUID   (NET)   1503.81   10569.   11
                     (GROSS)   1619.53   11382.   11
HEAT OF VAPORIZATION(25 C)
----
                    20 C   REF   30 C   REF
DENSITY (GRAM/ML) .7326   11   .7250   20
REFRACTIVE INDEX   1.4122   11   1.4077   20
SURFACE TENSION   22.76   20   21.83   20 .
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   13.8   50.3   72.0   100.6   165.1   20

 VAPOR PRESSURE EQUATION COEFFICIENTS
            A   B   C   D   MAX ERR AT P
EQUATION 1   7.1232   -1586.43   208.92   .52   10.
EQUATION 2   73.810   -8273.5   -7.95   10.9456   .02   10.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
                 VOL PER   REF   VOL PER   REF
                  0.75   8(DD)

AUTOIGNITION TEMPERATURE
       DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                            STOICH REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

85

2,3-DIMETHYLOCTANE

SYNONYMS.
FORMULA= C10H22   C/H= 5.416   MW= 142.287   VD= 4.9064

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF LIQUID   (NET)   1503.42   10566.   11
                           (GROSS)   1619.14   11379.   11
HEAT OF VAPORIZATION(25 C)
----
                       20 C   REF   30 C   REF
DENSITY (GRAM/ML)   .7379   11   .7298   20
REFRACTIVE INDEX   1.4149   11   1.4102   20
SURFACE TENSION   23.39   20   22.41   20
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   9.6   46.7   68.9   98.0   163.8   20

 VAPOR PRESSURE EQUATION COEFFICIENTS
                  A   B   C   D   MAX ERR AT P
EQUATION 1   7.0974   -1600.96   215.95   -.46   100.
EQUATION 2   65.454   -7655.0   -6.80   9.8710   -.01   30.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
                 VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
     DEG C   DELAY(SEC) REF   DEG C   REF
     231.   72.0   49

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                          STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

86

2,7-DIMETHYLOCTANE

SYNONYMS.
FORMULA= C10H22   C/H= 5.416 MW= 142.287 VD= 4.9064

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	1501.62	10553.	11
	(GROSS)	1617.34	11367.	11
HEAT OF VAPORIZATION(25 C)				

----

	20 C	REF	30 C	REF
DENSITY (GRAM/ML)	.7242	11	.7162	20
REFRACTIVE INDEX	1.4086	11	1.4038	20
SURFACE TENSION	21.73	20	20.79	20
VISCOSITY (CS)				

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	6.3	42.3		71.2	93.9	136.0	159.7	21

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	6.8973	-1477.23	207.93		-1.41	10.
EQUATION 2	94.056	-8878.3	-11.06	52.9809	-.99	10.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS	LOWER			UPPER	
	VOL PER	REF		VOL PER	REF
	0.75	8(DD)			

AUTOIGNITION TEMPERATURE
        DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                                STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

87

4,5-DIMETHYLOCTANE

SYNONYMS.
FORMULA= C10H22   C/H= 5.416   MW= 142.287   VD= 4.9064

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	1504.22	10572.	11
	(GROSS)	1619.94	11385.	11
HEAT OF VAPORIZATION(25 C)				

----

	20 C	REF	30 C	REF
DENSITY (GRAM/ML)	.7470	11	.7394	20
REFRACTIVE INDEX	1.4190	11	1.4145	20
SURFACE TENSION	24.60	20	23.62	20
VISCOSITY (CS)				

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	8.3	45.4	67.5		96.5		162.1	20

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	7.1150	-1607.41	217.59		.68	10.
EQUATION 2	60.478	-7383.4	-6.07	2.5994	-.11	30.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS	LOWER			UPPER	
	VOL PER	REF		VOL PER	REF

AUTOIGNITION TEMPERATURE

DEG C	DELAY(SEC)	REF	DEG C	REF
388.		50		

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                        STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

3-ETHYLOCTANE

SYNONYMS.
FORMULA= C10H22   C/H= 5.416   MW= 142.287   VD= 4.9064

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF LIQUID   (NET)   1504.47   10574.   11
                      (GROSS)   1620.19   11387.   11
HEAT OF VAPORIZATION(25 C)
----
                    20 C   REF   25 C   REF
DENSITY (GRAM/ML)   .7399   11   .7359   11
REFRACTIVE INDEX   1.4156   11   1.4136   11
SURFACE TENSION
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   166.5   11

 VAPOR PRESSURE EQUATION COEFFICIENTS
               A   B   C   D   MAX ERR AT P
EQUATION 1
EQUATION 2

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
              VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
    DEG C DELAY(SEC) REF   DEG C   REF
    235.   50

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                          STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

4-ETHYLOCTANE

SYNONYMS.
FORMULA= C10H22   C/H= 5.416 MW= 142.287 VD= 4.9064

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF LIQUID   (NET)   1504.61   10574.   11
                      (GROSS)   1620.33   11388.   11
HEAT OF VAPORIZATION(25 C)
----
                  20 C   REF   25 C   REF
DENSITY (GRAM/ML) .7381   11   .7343   11
REFRACTIVE INDEX 1.4151 11   1.4131 11
SURFACE TENSION
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   163.6   11

 VAPOR PRESSURE EQUATION COEFFICIENTS
              A   B   C   D   MAX ERR AT P
EQUATION 1
EQUATION 2

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
             VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
    DEG C DELAY(SEC) REF   DEG C   REF
    237.   54.0   49

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                        STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

90

2,2,6-TRIMETHYLHEPTANE

SYNONYMS.
FORMULA= C10H22   C/H= 5.416 MW= 142.287 VD= 4.9064

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	1499.68	10540.	11
	(GROSS)	1615.40	11353.	11

HEAT OF VAPORIZATION(25 C)
----

	20 C	REF	30 C	REF
DENSITY (GRAM/ML)	.7238	11	.7117	20
REFRACTIVE INDEX	1.4078	11	1.4012	20
SURFACE TENSION	21.17	20	20.27	20
VISCOSITY (CS)				

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	-1.3	34.6	56.2		84.3		148.2	20

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR AT P	
EQUATION 1	7.0829	-1543.56	219.21		-.64	100.
EQUATION 2	62.445	-7211.8	-6.41	6.7473	.27	30.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
                 VOL PER   REF   VOL PER   REF
                   0.75   8(DD)

AUTOIGNITION TEMPERATURE
        DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                        STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

2,5,5-TRIMETHYLHEPTANE

SYNONYMS.
FORMULA= C10H22   C/H= 5.416   MW= 142.287   VD= 4.9064

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	1500.89	10548.	11
	(GROSS)	1616.61	11362.	11

HEAT OF VAPORIZATION(25 C)

---

	20 C	REF	30 C	REF
DENSITY (GRAM/ML)	.7400	11	.7288	20
REFRACTIVE INDEX	1.4149	11	1.4088	20
SURFACE TENSION	23.29	20	22.29	20
VISCOSITY (CS)				

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	.1	36.6	58.5		87.3		152.8	20

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	7.0071	-1531.61	218.46		.51	10.
EQUATION 2	62.998	-7231.6	-6.51	8.8622	-.02	30.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS	LOWER		UPPER	
	VOL PER	REF	VOL PER	REF

AUTOIGNITION TEMPERATURE
      DEG C   DELAY(SEC)   REF   DEG C   REF
      485.   50

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                          STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

4-ISOPROPYLHEPTANE

SYNONYMS.
FORMULA= C10H22   C/H= 5.416 MW= 142.287 VD= 4.9064

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF LIQUID   (NET)   1504.36   10573.   1'
                      (GROSS)   1620.08   11386.   11
HEAT OF VAPORIZATION(25 C)
----
                      20 C   REF   30 C   REF
DENSITY (GRAM/ML) .7392   11   .733   20
REFRACTIVE INDEX 1.4155   11   1.412   20
SURFACE TENSION   23.82   20   22.81   20
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   6.9   43.8   65.8   94.7   160.0   20

VAPOR PRESSURE EQUATION COEFFICIENTS
               A   B   C   D   MAX ERR AT P
EQUATION 1   7.1105   -1597.27   217.71   .61   10.
EQUATION 2   62.291   -7429.9   -6.35   5.9639   -.12   30. ·

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
               VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
     DEG C   DELAY(SEC)   REF   DEG C   REF
     288.   50

MAX FLAME VEL (CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                              STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

UNDECANE

SYNONYMS. HENDECANE
FORMULA= C11H24   C/H= 5.462 MW= 156.314 VD= 5.3901

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	1649.00	10549.	(8)(60)
	(GROSS)	1775.24	11357.	(8)(60)
HEAT OF VAPORIZATION(25 C)		9.92	63.44	(8)(15)(R)

----

	20 C	REF	30 C	REF	110 C	REF
DENSITY (GRAM/ML)	.74026	8(Q)	.7329	20		
REFRACTIVE INDEX	1.41725	8(Q)	1.41284	20		
SURFACE TENSION	24.66	(8)(60)	23.80	20		
VISCOSITY (CS)	1.601	(8)(60)			.5977	20

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	31.4	72.2		103.1	126.8	170.6	194.5	21

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	7.6891	-2091.67	240.60		-.93	100.
EQUATION 2	36.853	-6768.3	-2.56	-6.1391	-.56	100.

FLASH POINT(DEG C)	(CC)	REF	(OC)	REF
			65.	(8)(9)(L)
			65.	3,4

FLAMMABLE LIMITS   LOWER   UPPER
                VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
        DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                          STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

2-METHYLDECANE

SYNONYMS.
FORMULA= C11H24   C/H= 5.462 MW= 156.314 VD= 5.3901

                          KCAL/MOLE   CAL/GRAM   REF
HEAT OF COMBUSTION (NET)
                (GROSS)
HEAT OF VAPORIZATION(25 C)

DENSITY (GRAM/ML)
REFRACTIVE INDEX
SURFACE TENSION
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T

  VAPOR PRESSURE EQUATION COEFFICIENTS
                  A   B   C   D   MAX ERR AT P
EQUATION 1
EQUATION 2

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
             VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
    DEG C DELAY(SEC) REF   DEG C   REF
    231.   50

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                        STOICH REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

95

DODECANE

SYNONYMS. DIHEXYL
FORMULA= C12H26   C/H= 5.500 MW= 170.341 VD= 5.8738

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	1794.61	10535.	(8)(60)
	(GROSS)	1931.37	11338.	(8)(60)
HEAT OF VAPORIZATION(25 C)		10.43	61.23	(8)(15)(R)

----

	20 C	REF	30 C	REF	150 C	REF
DENSITY (GRAM/ML)	.74871	8(Q)	.74163	20		
REFRACTIVE INDEX	1.42160	(8)(60)	1.41735	20		
SURFACE TENSION	25.35	(8)(60)	24.51	20		
VISCOSITY (CS)	2.007	(8)(60)			.5128	20

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	47.8	90.0		121.7	146.2	191.0	216.2	21

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	7.6970	-2161.60	232.98		1.00	10.
EQUATION 2	32.093	-6976.7	-1.79	-28.5014	.05	40.

FLASH POINT(DEG C)	(CC)	REF	(OC)	REF
	74.	1,3,4		

FLAMMABLE LIMITS	LOWER		UPPER	
	VOL PER	REF	VOL PER	REF
	.6	1,3,4,(8)(15)		

AUTOIGNITION TEMPERATURE

DEG C	DELAY(SEC)	REF	DEG C	REF
204.		3,4	232.	50

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                         STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

ISODODECANE

SYNONYMS.
FORMULA= C12H26   C/H= 5.500 MW= 170.341 VD= 5.8738

                              KCAL/MOLE   CAL/GRAM   REF
HEAT OF COMBUSTION (NET)
                 (GROSS)
HEAT OF VAPORIZATION(25 C)
----
                 25 C   REF
DENSITY (GRAM/ML)
REFRACTIVE INDEX 1.4170   51
SURFACE TENSION
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   178.0   51(AQ)

 VAPOR PRESSURE EQUATION COEFFICIENTS
              A   B   C   D   MAX ERR AT P
EQUATION 1
EQUATION 2

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
              VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
     DEG C DELAY(SEC) REF   DEG C   REF
     500.   46   500.   51
     534.   40(N)

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                          STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

1,1-DINEOPENTYLETHANE

SYNONYMS.
FORMULA= C12H26   C/H= 5.500 MW= 170.341 VD= 5.8738

                           KCAL/MOLE   CAL/GRAM   REF
HEAT OF COMBUSTION (NET)
                  (GROSS)
HEAT OF VAPORIZATION(25 C)
----
                  25 C   REF
DENSITY (GRAM/ML)
REFRACTIVE INDEX 1.4169   51
SURFACE TENSION
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   177.0   51(AQ)

  VAPOR PRESSURE EQUATION COEFFICIENTS
                  A   B   C   D   MAX ERR AT P
EQUATION 1
EQUATION 2

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
             VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
     DEG C   DELAY(SEC) REF   DEG C   REF
     500.   51

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                        STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

98

TRIDECANE

SYNONYMS.
FORMULA= C13H28   C/H= 5.533   MW= 184.368   VD= 6.3575

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF LIQUID   (NET)   1940.33   10524.   (8)(60)
                         (GROSS)   2087.61   11323.   (8)(60)
HEAT OF VAPORIZATION(25 C)   10.91   59.18   (8)(15)(R)
----
                      20 C   REF   30 C   REF   170 C   REF
DENSITY (GRAM/ML) .75604   8(Q)   .7492   20
REFRACTIVE INDEX   1.42560   (8)(60)   1.4213   20
SURFACE TENSION   25.99   (8)(60)   25.2   20
VISCOSITY (CS)   2.487   (8)(60)   .5043   20

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   59.4   104.0   137.7   162.5   209.4   234.0   21

 VAPOR PRESSURE EQUATION COEFFICIENTS
              A   B   C   D   MAX ERR AT P
EQUATION 1   8.0842   -2549.58   255.95   -1.99 100.
EQUATION 2   25.704   -6797.7   -.91   -8.2571   -1.73 100.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                      79.5   (8)(9)(J)

FLAMMABLE LIMITS   LOWER   UPPER
                VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
      DEG C   DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                            STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

99

TETRADECANE

SYNONYMS.
FORMULA= C14H30   C/H= 5.561 MW= 198.395 VD= 6.8412

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF LIQUID   (NET)   2085.94   10514.   (8)(60)
                     (GROSS)   2243.74   11309.   (8)(60)
HEAT OF VAPORIZATION(25 C)   11.37   57.31   (8)(15)(R)
----
                     20 C   REF   30 C   REF   190 C   REF
DENSITY (GRAM/ML) .76277   8(Q)   .7558   20
REFRACTIVE INDEX 1.42892   (8)(60)   1.4247 20
SURFACE TENSION   26.56   (8)(60)   25.7   20
VISCOSITY (CS)   3.061   (8)(60)   .4946   20

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   76.4   120.7   152.7   178.5   226.8   252.5   21

 VAPOR PRESSURE EQUATION COEFFICIENTS
             A   B   C   D   MAX ERR AT P
EQUATION 1   7.5078 -2120.78 205.93   3.49   10.
EQUATION 2   52.683 -8963.5   -4.62   -27.7363   2.36   10.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                     100.   1,3,4   121.   (8)(9)(L)

FLAMMABLE LIMITS   LOWER   UPPER
                   VOL PER   REF   VOL PER   REF
                     .5   1,3,4

AUTOIGNITION TEMPERATURE
    DEG C   DELAY(SEC) REF   DEG C   REF
    202.   3   232.   50

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                         STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

100

HEXADECANE

SYNONYMS. CETANE
FORMULA= C16H34   C/H= 5.608   MW= 226.449   VD= 7.8086

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF LIQUID   (NET)   2377.16   10498.   (8)(60)
                      (GROSS)   2556.00   11287.   (8)(60)
HEAT OF VAPORIZATION(25 C)   12.28   54.23   (9)(15)(R)
----
                      20 C   REF   30 C   REF   225 C   REF
DENSITY (GRAM/ML)   .77346   8(Q)   .76648   20
REFRACTIVE INDEX   1.43553 (8)(60)   1.43036 20
SURFACE TENSION   27.47   (8)(60)   26.7   20
VISCOSITY (CS)   4.492   (8)(60)   .4816   20

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   105.3   149.8   181.3   208.5   258.3   287.5   21

VAPOR PRESSURE EQUATION COEFFICIENTS
               A   B   C   D   MAX ERR AT P
EQUATION 1   6.9668 -1789.71 151.36   5.70   10.
EQUATION 2   75.658 -11479.8   -7.64 -92.5371   -3.56 40.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                                         135.   70(K)
                 FIRE POINT (DEG C) = 140.5   70

FLAMMABLE LIMITS   LOWER   UPPER
                VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
     DEG C   DELAY(SEC) REF   DEG C   REF
     232.   50   235.   (22)(50)(S)
     230.   66.0   49   235.   46(S)
     205.   4,6   241.   70
     232.   51(AT)

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL
    40.7   (62)(P)   2284   (62)   0.92   (73)
                           STOICH REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

ISOHEXADECANE

SYNONYMS.
FORMULA= C16H34   C/H= 5.608 MW= 226.449 VD= 7.8086

                        KCAL/MOLE   CAL/GRAM   REF
HEAT OF COMBUSTION (NET)
                 (GROSS)
HEAT OF VAPORIZATION(25 C)
----
                25 C   REF   37.78 C   REF
DENSITY (GRAM/ML)
REFRACTIVE INDEX 1.4370   51
SURFACE TENSION
VISCOSITY (CS)   28 SSU   51(AR)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   118.5   51(AS)

 VAPOR PRESSURE EQUATION COEFFICIENTS
              A   B   C   D   MAX ERR AT P
EQUATION 1
EQUATION 2

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
              VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
      DEG C DELAY(SEC) REF   DEG C   REF
      484.   51

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                        STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

OCTADECANE

SYNONYMS.
FORMULA= C18H38   C/H= 5.645   MW= 254.504   VD= 8.7760

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF LIQUID   (NET)   2668.61   10486.   (8)(60)
                    (GROSS)   2868.49   11271.   (8)(60)
HEAT OF VAPORIZATION(25 C)   13.01   51.12 (8)(15)(R)
----
                    20 C   REF   25 C   REF   30 C   REF
DENSITY (GRAM/ML)   .7818   8(Q)   .7785   20   .7751   20
REFRACTIVE INDEX   1.4389 (8)(T)   1.4369 (8)(T)
SURFACE TENSION   28.29   (8)(T)   27.5   20
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   119.6   169.6   207.4   236.0 288.0   317.0   21

 VAPOR PRESSURE EQUATION COEFFICIENTS
               A   B   C   D   MAX ERR AT P
EQUATION 1   7.9680 -2772.28   228.30   -.82   400.
EQUATION 2   36.145 -8925.4   -2.25 -24.2327   .69   40.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
                VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
      DEG C   DELAY(SEC)   REF   DEG C   REF
      235.   50

MAX FLAME VEL (CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                             STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

NONADECANE

SYNONYMS.
FORMULA= C19H40   C/H= 5.660 MW= 268.531 VD= 9.2597

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF LIQUID   (NET)   2814.11   10480.   (8)(60)
                      (GROSS)   3024.51   11263.   (8)(60)
HEAT OF VAPORIZATION(25 C)   13.38   49.83 (8)(15)(R)
----
                      20 C   REF   25 C   REF   40 C   REF
DENSITY (GRAM/ML) .7854   8(Q)   .7821   20
REFRACTIVE INDEX 1.4408 (8)(T)   1.4388 (8)(T)
SURFACE TENSION   28.59   (8)(T)   26.9   20
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T 133.2 183.5   220.0   248.0   299.8   330.0   21

 VAPOR PRESSURE EQUATION COEFFICIENTS
                A   B   C   D   MAX ERR AT P
EQUATION 1   7.8910   -2682.69   206.57   3.17   10.
EQUATION 2   3.475   -7464.7   2.48 -163.4155   .27   10.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
                VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
     DEG C   DELAY(SEC) REF   DEG C   REF
     237.   50

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                        STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

EICOSANE

SYNONYMS.
FORMULA= C20H42   C/H= 5.674 MW= 282.558 VD= 9.7434

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF LIQUID   (NET)   2959.89   10475.   (8)(60)
                         (GROSS)   3180.81   11257.   (8)(60)
HEAT OF VAPORIZATION(25 C)   13.74   48.63   (8)(15)(R)
----
                      20 C   REF   25 C   REF   40 C   REF
DENSITY (GRAM/ML) .7886   8(Q)   .7853   20
REFRACTIVE INDEX 1.4425   (8)(T) 1.4405   (8)(T)
SURFACE TENSION   28.87   (8)(T)   27.2   20
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   343.0   2

 VAPOR PRESSURE EQUATION COEFFICIENTS
               A   B   C   D   MAX ERR AT P
EQUATION 1
EQUATION 2

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
                VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
     DEG C   DELAY(SEC) REF   DEG C   REF
     240.   50

CYCLOPROPANE

SYNONYMS. TRIMETHYLENE
FORMULA= C3H6   C/H= 5.958 MW= 42.081 VD= 1.4511

                              KCAL/MOLE   CAL/GRAM   REF
HEAT OF COMBUSTION (NET)
                  (GROSS)
HEAT OF VAPORIZATION(25 C)

              15.56 C   REF
DENSITY (GRAM/ML) .563   11
REFRACTIVE INDEX
SURFACE TENSION
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T -116.8 -97.5   -82.3 -70.0 -46.9 -33.5   21

 VAPOR PRESSURE EQUATION COEFFICIENTS
              A   B   C   D   MAX ERR AT P
EQUATION 1   6.6364   -719.92   225.27   .44   10.
EQUATION 2 101.138 -5444.1   -13.13   10.5025   .40   100.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
              VOL PER   REF   VOL PER   REF
                2.4   1,3,4,(8)(15)   10.4   1,3,4,(8)(15)
                2.4   12(A),66   10.4   12(A),66
                2.48   66(B)   60.0   66(B)
                2.45   30   10.45 30
                2.5   12(A,B)   60.   12(A,B)
                                        10.3   52

AUTOIGNITION TEMPERATURE
      DEG C DELAY(SEC) REF   DEG C   REF
      454.   54(B)
      498.   1,3,4   498.   54

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL
      47.5 (63)   2358 (7)   4.97 (72)
                          STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)= .35   56   .18   56
QUENCHING DISTANCE(CM)=   .18   7   .18   7

106

CYCLOBUTANE

SYNONYMS.
FORMULA= C4H8   C/H= 5.958 MW= 56.108 VD= 1.9348

                         KCAL/MOLE   CAL/GRAM   REF
HEAT OF COMBUSTION (NET)
                  (GROSS)
HEAT OF VAPORIZATION(25 C)
----
               20 C   REF   25 C   REF
DENSITY (GRAM/ML) .6943   11(D)   .6890   11(D)
REFRACTIVE INDEX 1.365   11(D)   1.362   11(D)
SURFACE TENSION
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   12.5   11

 VAPOR PRESSURE EQUATION COEFFICIENTS
              A   B   C   D   MAX ERR AT P
EQUATION 1
EQUATION 2

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
             VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
      DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL
     56.6   (62)   2311 (62)   3.88 (73)
                             STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

107

METHYLCYCLOPROPANE

SYNONYMS.
FORMULA= C4H8   C/H= 5.958 MW= 56.108 VD= 1.9348

                           KCAL/MOLE   CAL/GRAM   REF
HEAT OF COMBUSTION (NET)
                  (GROSS)
HEAT OF VAPORIZATION(25 C)

DENSITY (GRAM/ML)
REFRACTIVE INDEX
SURFACE TENSION
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   .7   11

  VAPOR PRESSURE EQUATION COEFFICIENTS
                 A   B   C   D   MAX ERR AT P
EQUATION 1
EQUATION 2

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
               VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
       DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL
     49.2 (62)   2319 (62)   3.93 (73)
                          STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

CYCLOPENTANE

SYNONYMS. PENTAMETHYLENE
FORMULA= C5H10   C/H= 5.958 MW= 70.135 VD= 2.4185

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF LIQUID   (NET)   733.94   10465.   11
                        (GROSS)   786.54   11215.   11
HEAT OF VAPORIZATION(25 C)   6.82   97.21   11
----
                        20 C   REF   25 C   REF   37.78 C REF
DENSITY (GRAM/ML) .74538   11   .74045   11
REFRACTIVE INDEX 1.40645   11   1.40363   11
SURFACE TENSION   22.42   (8)(60)   21.82   11
VISCOSITY (CS)   .589   19   .499   11

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   -68.0   -40.4   -18.6   -1.3   31.0   49.3   21

  VAPOR PRESSURE EQUATION COEFFICIENTS
              A   B   C   D   MAX ERR AT P
EQUATION 1   6.8594   -1111.37   230.03   -.31   10.
EQUATION 2   71.214   -5743.6   -8.12   16.5742   -.39   10.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                      -42.   19(AY)
                      -37.0   3,(8)(9)(J)
                      -6.5   6

FLAMMABLE LIMITS   LOWER   UPPER
                   VOL PER   REF   VOL PER   REF
                    1.4   8(DD)

AUTOIGNITION TEMPERATURE
      DEG C   DELAY(SEC)   REF   DEG C   REF
      385.   6.   49

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL
     37.3   (63)   2264   (7)   3.16   (72)
                            STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)= .83   (7)(57)(E)
QUENCHING DISTANCE(CM)=   .33   7

109

METHYLCYCLOBUTANE

SYNONYMS.
FORMULA= C5H10   C/H= 5.958 MW= 70.135 VD= 2.4185

                          KCAL/MOLE   CAL/GRAM   REF
HEAT OF COMBUSTION (NET)
                  (GROSS)
HEAT OF VAPORIZATION(25 C)
----
                 20 C   REF   25 C   REF
DENSITY (GRAM/ML) .6930   11   .6884   11
REFRACTIVE INDEX 1.3836   11   1.3810   11
SURFACE TENSION
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   36.3   11

 VAPOR PRESSURE EQUATION COEFFICIENTS
                  A   B   C   D   MAX ERR AT P
EQUATION 1
EQUATION 2

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
             VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
      DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL
     44.6   (72)   3.18   (72)
                          STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

CIS-1,2-DIMETHYLCYCLOPROPANE

SYNONYMS.
FORMULA= C5H10   C/H= 5.958 MW= 70.135 VD= 2.4185

                           KCAL/MOLE   CAL/GRAM   REF
HEAT OF COMBUSTION (NET)
                   (GROSS)
HEAT OF VAPORIZATION(25 C)
----
                    20 C   REF   25 C   REF
DENSITY (GRAM/ML) .6939   11   .6889   11
REFRACTIVE INDEX   1.3829   11   1.3800   11
SURFACE TENSION
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   37.0   11

 VAPOR PRESSURE EQUATION COEFFICIENTS
                 A   B   C   D   MAX ERR AT P
EQUATION 1
EQUATION 2

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
               VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
       DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL
     46.5 (62)   2319 (62)   3.16 (73)
                          STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

111

TRANS-1,2-DIMETHYLCYCLOPROPANE

SYNONYMS.
FORMULA= C5H10   C/H= 5.958   MW= 70.135   VD= 2.4185

                              KCAL/MOLE   CAL/GRAM   REF
HEAT OF COMBUSTION (NET)
                   (GROSS)
HEAT OF VAPORIZATION(25 C)
----
                  20 C   REF   25 C   REF
DENSITY (GRAM/ML) .6698   11   .6648   11
REFRACTIVE INDEX 1.3713   11   1.3683   11
SURFACE TENSION
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   28.2   11

 VAPOR PRESSURE EQUATION COEFFICIENTS
              A   B   C   D   MAX ERR AT P
EQUATION 1
EQUATION 2

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
                VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
        DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL
     46.2   (62)   2312   (62)   3.19 (73)
                           STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

ETHYLCYCLOPROPANE

SYNONYMS.
FORMULA= C5H10   C/H= 5.958   MW= 70.135   VD= 2.4185

                              KCAL/MOLE   CAL/GRAM   REF
HEAT OF COMBUSTION (NET)
                  (GROSS)
HEAT OF VAPORIZATION(25 C)
----
                  20 C   REF   25 C   REF
DENSITY (GRAM/ML) .6840   11   .6790   11
REFRACTIVE INDEX 1.3786   11   1.3756   11
SURFACE TENSION
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   35.9   11

  VAPOR PRESSURE EQUATION COEFFICIENTS
                  A   B   C   D   MAX ERR AT P
EQUATION 1
EQUATION 2

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
                VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
      DEG C   DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL
   47.5 (62)   2291 (62)   3.40 (73)
                          STOICH REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

113

CYCLOHEXANE

SYNONYMS. HEXAHYDROBENZENE, HEXAMETHYLENE
FORMULA= C6H12   C/H= 5.958 MW= 84.163 VD= 2.9022

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF LIQUID   (NET)   873.76   10382.   11
                    (GROSS)   936.88   11132.   11
HEAT OF VAPORIZATION(25 C)   7.90   93.81   11
----
                    20 C   REF   25 C   REF   40 C   REF
DENSITY (GRAM/ML) .77855   11   .77389   11
REFRACTIVE INDEX 1.42623   11   1.42354   11
SURFACE TENSION   24.98   (8)(60) 24.38   11   21.99   19
VISCOSITY (CS)   1.258   19   .926   19

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T -45.3   -15.9   6.7   25.5   60.8   80.7   21

 VAPOR PRESSURE EQUATION COEFFICIENTS
               A   B   C   D   MAX ERR AT P
EQUATION 1   6.6282   -1086.16   209.13   1.65   10.
EQUATION 2 92.898   -7320.8   -11.19   19.9212   -1.29   40.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                     -17.0   1
                     -20.0   3,4

FLAMMABLE LIMITS   LOWER   UPPER
            VOL PER   REF   VOL PER   REF
        1.3 AT 50 C 14(U)   9.1 AT 50 C 14(U)
            1.3   1,3,4,(8)(15)   8.4   1,4
            1.3   12(A)   8.   3,12(A)
                                        7.8   (8)(15)

AUTOIGNITION TEMPERATURE
    DEG C DELAY(SEC) REF   DEG C   REF
    268.   1   259.   3,4
    296.   (22)(33)(8)   325.   (22)(24)(8)
    270.   102.   49

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL
    38.7 (69)   2249 (55)   2.65 (69)
                        STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)= 1.0   56   .23   56
QUENCHING DISTANCE(CM)=   .41   7   .18   7

114

METHYLCYCLOPENTANE

SYNONYMS.
FORMULA= C6H12   C/H= 5.958 MW= 84.163 VD= 2.9022

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	878.02	10432.	11
	(GROSS)	941.14	11182.	11
HEAT OF VAPORIZATION(25 C)		7.56	89.83	11

----

	20 C	REF	25 C	REF	40 C	REF
DENSITY (GRAM/ML)	.74864	11	.74394	11		
REFRACTIVE INDEX	1.40970	11	1.40700	11		
SURFACE TENSION	22.19	(8)(60)	21.61	11		
VISCOSITY (CS)	.677	19			.555	19

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	-53.7	-23.7		-.6	17.9	52.3	71.8	21

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	6.9847	-1247.31	232.25		.89	10.
EQUATION 2	54.950	-5503.0	-5.54	2.6570	-.37	40.

FLASH POINT(DEG C)	(CC)	REF	(OC)	REF
	-25.	19(AY)		
	-27.0	(8)(9)(J)		

FLAMMABLE LIMITS	LOWER			UPPER	
	VOL PER	REF		VOL PER	REF
	1.2 AT 50 C	14(U)	8.5 AT 50 C	14(U)	
	1.2	8(DD)	8.35	(8)(16)	

AUTOIGNITION TEMPERATURE

DEG C	DELAY(SEC)	REF	DEG C	REF
323.	6.	49	329.	(22)(33)(8)
469.		46		

MAX FLAME VEL(CM/SEC)	FLAME TEMP(DEG K)	VOL PERCENT FUEL
36.0 (63)	2228 (7)	2.75 (72)
	STOICH REF	ABS MIN REF

MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

ETHYLCYCLOBUTANE

SYNONYMS.
FORMULA= C6H12   C/H= 5.958   MW= 84.163   VD= 2.9022

                              KCAL/MOLE   CAL/GRAM   REF
HEAT OF COMBUSTION (NET)
                  (GROSS)
HEAT OF VAPORIZATION(25 C)
----
                 20 C   REF   25 C   REF
DENSITY (GRAM/ML) .7279   11   .7232   11
REFRACTIVE INDEX 1.4020   11   1.3994   11
SURFACE TENSION
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   70.6   11

 VAPOR PRESSURE EQUATION COEFFICIENTS
              A   B   C   D   MAX ERR AT P
EQUATION 1
EQUATION 2

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
              VOL PER   REF   VOL PER   REF
              1.2   3,4,12(A)   7.7   3,4,12(A)

AUTOIGNITION TEMPERATURE
    DEG C DELAY(SEC)   REF   DEG C   REF
    211.   (22)(30)   212.   3,4

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL
    44.7 (62)   2291 (62)   2.62 (73)
                           STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

116

1,1,2-TRIMETHYLCYCLOPROPANE

SYNONYMS.
FORMULA= C6H12   C/H= 5.958 MW= 84.163 VD= 2.9022

                              KCAL/MOLE   CAL/GRAM   REF
HEAT OF COMBUSTION (NET)
                   (GROSS)
HEAT OF VAPORIZATION(25 C)
----
                    20 C   REF   25 C   REF
DENSITY (GRAM/ML) .6947   11   .6897   11
REFRACTIVE INDEX 1.3864   11   1.3834   11
SURFACE TENSION
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   52.4   11

  VAPOR PRESSURE EQUATION COEFFICIENTS
                  A   B   C   D   MAX ERR AT P
EQUATION 1
EQUATION 2

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
                VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
      DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL
     43.5   (62)   2310 (62)   2.62 (73)
                           STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

117

ISOPROPYLCYCLOPROPANE

SYNONYMS. 2-CYCLOPROPYLPROPANE
FORMULA= C6H12   C/H= 5.958 MW= 84.163 VD= 2.9022

                              KCAL/MOLE   CAL/GRAM   REF
HEAT OF COMBUSTION (NET)
                    (GROSS)
HEAT OF VAPORIZATION(25 C)

DENSITY (GRAM/ML)
REFRACTIVE INDEX
SURFACE TENSION
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T

 VAPOR PRESSURE EQUATION COEFFICIENTS
              A   B   C   D   MAX ERR AT P
EQUATION 1
EQUATION 2

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
               VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
        DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL
     42.7 (72)   2.66 (72)
                            STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

118

CYCLOHEPTANE

SYNONYMS.
FORMULA= C7H14   C/H= 5.958 MW= 98.190 VD= 3.3858

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF LIQUID   (NET)   1021.50   10403.   11
                         (GROSS)   1095.14   11153.   11
HEAT OF VAPORIZATION(25 C)
----
                  20 C   REF   25 C   REF
DENSITY (GRAM/ML) .8110   11   .8066   11
REFRACTIVE INDEX 1.4449   11   1.4424   11
SURFACE TENSION
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   118.8   11

 VAPOR PRESSURE EQUATION COEFFICIENTS
             A   B   C   D   MAX ERR AT P
EQUATION 1
EQUATION 2

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
               VOL PER   REF   VOL PER   REF
                 1.1   8(DD)

AUTOIGNITION TEMPERATURE
      DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                            STOICH REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

119

METHYLCYCLOHEXANE

SYNONYMS. HEXAHYDROTOLUENE, CYCLOHEXYLMETHANE
FORMULA= C7H14   C/H= 5.958 MW= 98.190 VD= 3.3858

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	1017.49	10362.	11
	(GROSS)	1091.13	11112.	11
HEAT OF VAPORIZATION(25 C)		8.45	86.07	11

---

	20 C	REF	25 C	REF	40 C	REF
DENSITY (GRAM/ML)	.76939	11	.76506	11		
REFRACTIVE INDEX	1.42312	11	1.42058	11		
SURFACE TENSION	23.81	19	23.17	11	21.76	19
VISCOSITY (CS)	.954	19			.750	19

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	-35.9	-3.2		22.0	42.1	79.6	100.9	21

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	6.9855	-1359.75	230.52		.89	10.
EQUATION 2	51.732	-5780.7	5.00	.1622	-.25	40.

FLASH POINT(DEG C)	(CC)	REF	(OC)	REF
	-4.0	1,3,4		
	-1.0	19(AY)		

FLAMMABLE LIMITS   LOWER   UPPER

VOL PER	REF	VOL PER	REF
.94 AT 50 C	14(U)	7.1 AT 50 C	14(U)
1.2	3,4,(8)(15)		
1.2	12(A)		
1.5	1		

AUTOIGNITION TEMPERATURE

DEG C	DELAY(SEC)	REF	DEG C	REF
285.		3	285.	(22)(33)(B)
265.	108.	49	393.	46

MAX FLAME VEL(CM/SEC)	FLAME TEMP(DEG K)	VOL PERCENT FUEL
37.5 (63)	2186 (7)	2.43 (72)

	STOICH	REF	ABS MIN	REF
MIN IGN ENERGY(MILLIJOULE)=			.27	(7)(59)(F)
QUENCHING DISTANCE(CM)=			.18	7

1,1-DIMETHYLCYCLOPENTANE

SYNONYMS.
FORMULA= C7H14   C/H= 5.958 MW= 98.190 VD= 3.3858

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF LIQUID   (NET)   1021.80   10406.   11
                      (GROSS)   1095.44   11156.   11
HEAT OF VAPORIZATION(25 C)   8.08   82.28   11
----
                      20 C   REF   25 C   REF
DENSITY (GRAM/ML) .75448   11   .74991   11
REFRACTIVE INDEX 1.41356 11   1.41091   11
SURFACE TENSION   21.74   (8)(60)   21.23   11
VISCOSITY (CS)   1.249   (8)(61)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T -43.1   -12.3   6.4   31.2   87.9   19

 VAPOR PRESSURE EQUATION COEFFICIENTS
              A   B   C   D   MAX ERR AT P
EQUATION 1   6.8257 -1223.86   222.40   .07   10.
EQUATION 2   75.266 -6581.4   -8.58   21.0200   .10   30.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                     -12.0   19(AY)

FLAMMABLE LIMITS   LOWER   UPPER
               VOL PER   REF   VOL PER   REF
                 1.1   8(DD)

AUTOIGNITION TEMPERATURE
        DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                         STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

121

CIS-1,2-DIMETHYLCYCLOPENTANE

SYNONYMS.
FORMULA= C7H14   C/H= 5.958 MW= 98.190 VD= 3.3858

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	1023.42	10423.	11
	(GROSS)	1097.06	11173.	11
HEAT OF VAPORIZATION(25 C)		8.55	87.07	11

----

	20 C	REF	25 C	REF	30 C	REF
DENSITY (GRAM/ML)	.77262	11	.76807	11	.76351	19
REFRACTIVE INDEX	1.42217	11	1.41963	11	1.41691	19
SURFACE TENSION	24.05	19			22.93	19
VISCOSITY (CS)						

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	-34.9	-3.3	16.0		41.5		99.5	19

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	6.8438	-1265.69	219.84		-.04	10.
EQUATION 2	78.834	-6967.8	-9.06	25.3242	.12	30.

FLASH POINT(DEG C)	(CC)	REF	(OC)	REF
	-4.0	19(AY)		

FLAMMABLE LIMITS	LOWER		UPPER	
	VOL PER	REF	VOL PER	REF
	1.1	8(DD)		

AUTOIGNITION TEMPERATURE

DEG C	DELAY(SEC)	REF	DEG C	REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                         STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(M)=

TRANS-1,2-DIMETHYLCYCLOPENTANE

SYNONYMS.
FORMULA= C7H14   C/H= 5.958   MW= 98.190   VD= 3.3858

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF LIQUID   (NET)   1022.00   10408.   11
                     (GROSS)   1095.64   11158.   11
HEAT OF VAPORIZATION(25 C)   8.26   84.11   11
----
                     20 C   REF   25 C   REF   30 C   REF
DENSITY (GRAM/ML)   .75144   11   .74686   11   .74227   19
REFRACTIVE INDEX   1.41200   11   1.40941   11   1.40667   19
SURFACE TENSION   21.51   19   20.47   19
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   -40.1   -9.0   9.9   34.9   91.9   19

  VAPOR PRESSURE EQUATION COEFFICIENTS
              A   B   C   D   MAX ERR AT P
EQUATION 1   6.8475 -1244.15   221.79   .15   10.
EQUATION 2 75.282   -6674.7   -8.56   20.8096   -.00   30.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                     -10.0   19(AY)

FLAMMABLE LIMITS   LOWER   UPPER
                 VOL PER   REF   VOL PER   REF
                   1.1   8(DD)

AUTOIGNITION TEMPERATURE
     DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                            STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

123

CIS-1,3-DIMETHYLCYCLOPENTANE

SYNONYMS.
FORMULA= C7H14   C/H= 5.958   MW= 98.190   VD= 3.3858

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	1022.26	10411.	11
	(GROSS)	1095.90	11161.	11
HEAT OF VAPORIZATION(25 C)		8.20	83.51	11

---

	20 C	REF	25 C	REF	30 C	REF
DENSITY (GRAM/ML)	.74479	11	.74025	11	.73989	19
REFRACTIVE INDEX	1.40894	11	1.40633	11	1.40555	19
SURFACE TENSION	21.21	19			20.20	19
VISCOSITY (CS)						

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	-40.3	-9.2	9.7		34.7		91.7	19

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	6.8443	-1243.16	221.93		.11	10.
EQUATION 2	75.144	-6660.6	-8.54	20.8997	.04	30.

FLASH POINT(DEG C)	(CC)	REF	(OC)	REF
	-10.0	19(AY)		

FLAMMABLE LIMITS	LOWER		UPPER	
	VOL PER	REF	VOL PER	REF
	1.1	8(DD)		

AUTOIGNITION TEMPERATURE
DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

STOICH REF   ABS MIN   REF
MIN IGN ENERGY(MILLI JOULE)=
QUENCHING DISTANCE(CM)=

124

TRANS-1,3-DIMETHYLCYCLOPENTANE

SYNONYMS.
FORMULA= C7H14   C/H= 5.958 MW= 98.190 VD= 3.3858

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF LIQUID   (NET)   1022.75   10416.   11
                         (GROSS)   1096.39   11166.   11
HEAT OF VAPORIZATION(25 C)   8.25   84.00   11
----
                       20 C   REF   25 C   REF   30 C   REF
DENSITY (GRAM/ML)   .74880   11   .74435   11   .73570   19
REFRACTIVE INDEX   1.41074   11   1.40813 11   1.40369   19
SURFACE TENSION   20.76   19   19.75   19
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T -41.0   -10.0   8.9   33.8   90.8   19

VAPOR PRESSURE EQUATION COEFFICIENTS
              A   B   C   D   MAX ERR AT P
EQUATION 1   6.8353 -1236.37   221.88   -.02   30.
EQUATION 2   76.651 -6698.2   -8.77   22.9457   .09   30.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                      -11.0   19(AY)

FLAMMABLE LIMITS   LOWER   UPPER
                    VOL PER   REF   VOL PER   REF
                      1.1   8(DD)

AUTOIGNITION TEMPERATURE
        DEG C   DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                            STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

125

ETHYLCYCLOPENTANE

SYNONYMS.
FORMULA= C7H14   C/H= 5.958   MW= 98.190   VD= 3.3858

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	1023.86	10427.	11
	(GROSS)	1097.50	11177.	11
HEAT OF VAPORIZATION(25 C)		8.72	88.81	11

----

	20 C	REF	25 C	REF	40 C	REF
DENSITY (GRAM/ML)	.76647	11	.76217	11		
REFRACTIVE INDEX	1.41981	11	1.41730	11		
SURFACE TENSION	23.88	(8)(60)	23.37	11	21.25	19
VISCOSITY (CS)	.740	19			.608	19

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	-32.2	-.1		25.0	45.0	82.3	103.4	21

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	6.9043	-1307.23	221.53		.17	10.
EQUATION 2	71.212	-6734.7	-7.89	16.9555	-.16	400.

FLASH POINT(DEG C)	(CC)	REF	(OC)	REF
	-1.0	19(AY)		

FLAMMABLE LIMITS   LOWER   UPPER

	VOL PER	REF	VOL PER	REF
	1.1	3,4,(8)(15)	6.7	3,4,(8)(15)
	1.1	12(A)	6.7	12(A)

AUTOIGNITION TEMPERATURE

DEG C	DELAY(SEC)	REF	DEG C	REF
262.		3,4		

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                         STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

ISOPROPYLCYCLOBUTANE

SYNONYMS.
FORMULA= C7H14   C/H= 5.958 MW= 98.190 VD= 3.3858

                            KCAL/MOLE   CAL/GRAM   REF
HEAT OF COMBUSTION (NET)
                  (GROSS)
HEAT OF VAPORIZATION(25 C)

DENSITY (GRAM/ML)
REFRACTIVE INDEX
SURFACE TENSION
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T

 VAPOR PRESSURE EQUATION COEFFICIENTS
                 A   B   C   D   MAX ERR AT P
EQUATION 1
EQUATION 2

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
             VOL PER   REF   VOL PER   REF

             ,

AUTOIGNITION TEMPERATURE
      DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL
     39.1 (62)   2168 (62)   2.65 (73)
                            STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

127

SEC-BUTYLCYCLOPROPANE

SYNONYMS. 2-CYCLOPROPYLBUTANE
FORMULA= C7H14   C/H= 5.958 MW= 98.190 VD= 3.3858

                              KCAL/MOLE   CAL/GRAM   REF
HEAT CF COMBUSTION (NET)
                 (GROSS)
HEAT OF VAPORIZATION(25 C)

DENSITY (GRAM/ML)
REFRACTIVE INDEX
SURFACE TENSION
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T

  VAPOR PRESSURE EQUATION COEFFICIENTS
                   A   B   C   D   MAX ERR AT P
EQUATION 1
EQUATION 2

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
                 VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
      DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL
     39.8 (72)   2.51 (72)
                          STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

CYCLOOCTANE

SYNONYMS.
FORMULA= C6H16   C/H= 5.958   MW= 112.217   VD= 3.8695

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	1168.00	10408.	11
	(GROSS)	1252.16	11158.	11

HEAT OF VAPORIZATION(25 C)

---

	20 C	REF	25 C	REF
DENSITY (GRAM/ML)	.8361	11	.8320	11
REFRACTIVE INDEX	1.4587	11	1.4563	11
SURFACE TENSION				
VISCOSITY (CS)				

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T							151.1	11

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR AT P
EQUATION 1					
EQUATION 2					

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS	LOWER			UPPER	
	VOL PER	REF		VOL PER	REF
	0.95	8(DD)			

AUTOIGNITION TEMPERATURE
        DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                        STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

1,1-DIMETHYLCYCLOHEXANE

SYNONYMS.
FORMULA= C8H16   C/H= 5.296 MW= 114.233 VD= 3.9391

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	1152.49	10089.	11
	(GROSS)	1247.17	10918.	11
HEAT OF VAPORIZATION(25 C)		9.04	79.16	11

---

	20 C	REF	25 C	REF
DENSITY (GRAM/ML)	.78094	11	.77677	11
REFRACTIVE INDEX	1.42900	11	1.42661	11
SURFACE TENSION	24.01	19	23.61	11
VISCOSITY (CS)				

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	-24.4	10.3		37.3	57.9	97.2	119.5	21

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	7.1473	-1519.96	237.03		-1.45	100.
EQUATION 2	37.363	-5419.0	-2.82	-12.6144	1.05	40.

FLASH POINT(DEG C)	(CC)	REF	(OC)	REF
	13.0	19(AY)		

FLAMMABLE LIMITS	LOWER		UPPER	
	VOL PER	REF	VOL PER	REF
	0.95	8(DD)		

AUTOIGNITION TEMPERATURE
      DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                        STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

CIS-1,2-DIMETHYLCYCLOHEXANE

SYNONYMS.
FORMULA= C8H16   C/H= 5.958   MW= 112.217 VD= 3.8695

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF LIQUID   (NET)   1164.15   10374.   11
                          (GROSS) 1248.31   11124.   11
HEAT OF VAPORIZATION(25 C)   9.49   84.59   11
----
                         20 C   REF   25 C   REF
DENSITY (GRAM/ML) .79627   11   .79222   11
REFRACTIVE INDEX 1.43596 11   1.43358   11
SURFACE TENSION   25.96   19   25.19   11
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T -15.9   18.4   45.3   66.8   107.0   129.7   21

 VAPOR PRESSURE EQUATION COEFFICIENTS
            A   B   C   D   MAX ERR AT P
EQUATION 1   6.8438 -1370.84   216.20   .11   10.
EQUATION 2 75.394   -7338.8   -8.44   23.7802   -.13   400.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                      16.0   10(J)
                      22.0   19(AY)

FLAMMABLE LIMITS   LOWER   UPPER
                 VOL PER   REF   VOL PER   REF
                  0.95   8(DD)

AUTOIGNITION TEMPERATURE
        DEG C   DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                         STOICH REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

131

TRANS-1,2-DIMETHYLCYCLOHEXANE

SYNONYMS.
FORMULA= C8H16   C/H= 5.958 MW= 112.217 VD= 3.8695

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF LIQUID   (NET)   1162.60   10360.   11
                        (GROSS)   1246.76   11110.   11
HEAT OF VAPORIZATION(25 C)   9.17   81.69   11
----
                   20 C   REF   25 C   REF
DENSITY (GRAM/ML) .77601   11   .77204   11
REFRACTIVE INDEX 1.42695   11   1.42470   11
SURFACE TENSION   23.41   19   23.57   11
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T -21.1   13.0   39.7   61.0   100.9   123.4   21

  VAPOR PRESSURE EQUATION COEFFICIENTS
             A   B   C   D   MAX ERR AT P
EQUATION 1 6.8599 -1369.08 220.67   .20   10.
EQUATION 2 69.228 -6897.0   -7.57   19.4718   .04   40.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                     17.0   19(AY)
                     10.5   10(J)

FLAMMABLE LIMITS   LOWER   UPPER
              VOL PER   REF   VOL PER   REF
               0.95   8(DD)

AUTOIGNITION TEMPERATURE
        DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                           STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

132

CIS-1,3-DIMETHYLCYCLOHEXANE

SYNONYMS.
FORMULA= C8H16   C/H= 5.958 MW= 112.217 VD= 3.8695

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF LIQUID   (NET)   1161.49   10350.   11
                      (GROSS)   1245.65   11100.   11
HEAT OF VAPORIZATION(25 C)   9.14   81.41   11
----
                      20 C   REF   25 C   REF
DENSITY (GRAM/ML) .76603   11   .76196   11
REFRACTIVE INDEX   1.42294   11   1.42063   11
SURFACE TENSION   23.12   (8)(60)   22.64   11
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T -19.4   14.9   41.4   62.5   102.1   124.4   21

VAPOR PRESSURE EQUATION COEFFICIENTS
              A   B   C   D   MAX ERR AT P
EQUATION 1   6.9570   -1414.30   222.66   .82   10.
EQUATION 2   60.580   -6599.5   -6.24   6.1889   .26 400.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                     15.0   19(AY)

FLAMMABLE LIMITS   LOWER   UPPER
                  VOL PER   REF   VOL PER   REF
                   0.95   8(DD)

AUTOIGNITION TEMPERATURE
        DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                            STOICH   REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

TRANS-1,3-DIMETHYLCYCLOHEXANE

SYNONYMS.
FORMULA= C8H16   C/H= 5.958 MW= 112.217 VD= 3.8695

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	1163.22	10366.	11
	(GROSS)	1247.38	11116.	11
HEAT OF VAPORIZATION(25 C)		9.37	83.48	11

	20 C	REF	25 C	REF
DENSITY (GRAM/ML)	.78472	11	.78055	11
REFRACTIVE INDEX	1.43085	11	1.42843	11
SURFACE TENSION	24.67	(8)(60)	24.16	11
VISCOSITY (CS)				

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	-22.7	11.2		37.5	58.5	97.8	120.1	21

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	6.9090	-1378.24	222.16		.68	10.
EQUATION 2	62.427	-6583.7	-6.54	8.2202	-.15	40.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS	LOWER			UPPER	
	VOL PER	REF		VOL PER	REF
	0.95	8(DD)			

AUTOIGNITION TEMPERATURE
        DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                        STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

CIS-1,4-DIMETHYLCYCLOHEXANE

SYNONYMS. HEXAHYDROXYLENE
FORMULA= C8H16   C/H= 5.958 MW= 112.217 VD= 3.8695

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF LIQUID   (NET)   1163.24   10366.   11
                     (GROSS)   1247.40   11116.   11
HEAT OF VAPORIZATION(25 C)   9.33   83.12   11
----
                   20 C   REF   25 C   REF
DENSITY (GRAM/ML) .78285   11   .77870   11
REFRACTIVE INDEX 1.42966 11   1.42731 11
SURFACE TENSION   24.45   (8)(60) 23.96   11
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T -20.0   14.5   41.1   62.3   101.9   124.3   21

 VAPOR PRESSURE EQUATION COEFFICIENTS
            A   B   C   D   MAX ERR AT P
EQUATION 1 6.9888 -1436.42   225.50   .86   10.
EQUATION 2 56.029 -6369.7   -5.58   2.9863   -.23   40.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                     11.0   (1,3,4)(HH)
                     16.0   19(AY)

FLAMMABLE LIMITS   LOWER   UPPER
               VOL PER   REF   VOL PER   REF
                 0.95   8(DD)

AUTOIGNITION TEMPERATURE
       DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                          STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

TRANS-1,4-DIMETHYLCYCLOHEXANE

SYNONYMS. HEXAHYDROXYLENE
FORMULA= C8H16   C/H= 5.958 MW= 112.217 VD= 3.8695

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	1161.62	10352.	11
	(GROSS)	1245.78	11102.	11
HEAT OF VAPORIZATION(25 C)		9.05	80.67	11

---

	20 C	REF	25 C	REF
DENSITY (GRAM/ML)	.76255	11	.75835	11
REFRACTIVE INDEX	1.42090	11	1.41853	11
SURFACE TENSION	23.02	(8)(60)	22.52	11
VISCOSITY (CS)				

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	-24.3	10.1		36.5	57.6	97.0	119.3	21

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	6.9981	-1434.26	229.21		1.11	10.
EQUATION 2	50.175	-5984.6	-4.74	-1.8064	-.39	40.

FLASH POINT(DEG C)	(CC)	REF	(OC)	REF
	11.0	(1,3,4)(HH)		
	12.0	19(AY)		

FLAMMABLE LIMITS	LOWER		UPPER	
	VOL PER	REF	VOL PER	REF
	0.95	8(DD)		

AUTOIGNITION TEMPERATURE
        DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                              STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

ETHYLCYCLOHEXANE

SYNONYMS.
FORMULA= C8H16   C/H= 5.958 MW= 112.217 VD= 3.8695

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF LIQUID   (NET)   1164.07   10373.   11
                           (GROSS)   1248.23   11123.   11
HEAT OF VAPORIZATION(25 C)   9.67   86.20   11

----

                      20 C   REF   25 C   REF   40 C   REF
DENSITY (GRAM/ML)   .78792   11   .78390   11
REFRACTIVE INDEX   1.43304   11   1.43073   11
SURFACE TENSION   24.89   19   25.12   11   22.90   19
VISCOSITY (CS)   1.069   19   .843   19

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   10   30   40   100   400   760   REF
T -14.5 20.6   47.6   69.0   109.1   131.8   21

VAPOR PRESSURE EQUATION COEFFICIENTS
                A   B   C   D   MAX ERR AT P
EQUATION 1   7.0289   -1478.46   224.80   .97   10.
EQUATION 2   53.386   -6409.0   -5.15   -2.2124   .23   400.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                      35.0   3,4
                      22.0   19(AY)

FLAMMABLE LIMITS   LOWER   UPPER
                  VOL PER   REF   VOL PER   REF
                    .9   3,4,12(A)   6.6   3,4,12(A)
                    .95   8

AUTOIGNITION TEMPERATURE
     DEG C   DELAY(SEC)   REF   DEG C   REF
     264.   114.   49   262.   3,4

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                            STOICH REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

TRANS-1,2-CIS-4-TRIMETHYLCYCLOPENTANE

SYNONYMS.
FORMULA= C8H16   C/H= 5.958 MW= 112.217 VD= 3.8695

                         KCAL/MOLE   CAL/GRAM   REF
HEAT OF COMBUSTION (NET)
                    (GROSS)
HEAT OF VAPORIZATION(25 C)
----
                   20 C   REF   25 C   REF
DENSITY (GRAM/ML) .74727   11   .74302   11
REFRACTIVE INDEX   1.41060 11   1.40812 11
SURFACE TENSION
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   109.3   11

 VAPOR PRESSURE EQUATION COEFFICIENTS
              A   B   C   D   MAX ERR AT P
EQUATION 1
EQUATION 2

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                     3.0   19(AY)

FLAMMABLE LIMITS   LOWER   UPPER
                 VOL PER   REF   VOL PER   REF
                   0.95   8(DD)

AUTOIGNITION TEMPERATURE
      DEG C   DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                            STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

138

1-METHYL-1-ETHYLCYCLOPENTANE

SYNONYMS.
FORMULA= C8H16   C/H= 5.958 MW= 112.217 VD= 3.8695

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF LIQUID   (NET)   1168.80   10416.   11
                     (GROSS)   1252.95   11166.   11
HEAT OF VAPORIZATION(25 C)
----
                      20 C   REF   2 C   REF   30 C   REF
DENSITY (GRAM/ML)   .78093   11   .77670   11   .77246   19
REFRACTIVE INDEX   1.42718   11   1.42476   11   1.42239   19
SURFACE TENSION   24.74   19   23.68   19
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   -21.6   12.6   33.1   60.1   121.5   19

VAPOR PRESSURE EQUATION COEFFICIENTS
              A   B   C   D   MAX ERR AT P
EQUATION 1 7.0109 -1437.54   226.62   -.57   100.
EQUATION 2 55.722 -6319.2   -5.54   3.6281   -.03   30.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
                VOL PER   REF   VOL PER   REF
                 0.95   8(DD)

AUTOIGNITION TEMPERATURE
        DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                          STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

CIS-1-METHYL-2-ETHYLCYCLOPENTANE

SYNONYMS.
FORMULA= C8H16   C/H= 5.958 MW= 112.217 VD= 3.8695

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF LIQUID   (NET)   1168.10   10409.   11
                    (GROSS)   1252.26   11159.   11
HEAT OF VAPORIZATION(25 C)
----
                    20 C   REF   25 C   REF   30 C   REF
DENSITY (GRAM/ML) .78522   11   .78113   11   .77704   19
REFRACTIVE INDEX 1.42933 11   1.42695 11   1.42459 19
SURFACE TENSION   25.29   19   24.25   19
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   -16.6   18.1   38.9   66.1   128.0   19

   VAPOR PRESSURE EQUATION COEFFICIENTS
             A   B   C   D   MAX ERR AT P
EQUATION 1   7.0489 -1474.16   225.71   .59   10.
EQUATION 2   55.717 -6462.2   -5.50   2.7523   -.05   30.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
                VOL PER   REF   VOL PER   REF
                  0.95   8(DD)

AUTOIGNITION TEMPERATURE
        DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                        STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

TRANS-1-METHYL-2-ETHYLCYCLOPENTANE

SYNONYMS.
FORMULA= C8H16   C/H= 5.958   MW= 112.217   VD= 3.8695

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF LIQUID   (NET)   1168.70   10415.   11
                      (GROSS)   1252.86   11165.   11
HEAT OF VAPORIZATION(25 C)
----
                     20 C   REF   25 C   REF   30 C   REF
DENSITY (GRAM/ML)   .7690   11   .7649   11   .7608   19
REFRACTIVE INDEX   1.4219   11   1.4195   11   1.4171   19
SURFACE TENSION   23.27   19   22.28   19
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   -21.2   12.8   33.3   60.1   121.2   19

  VAPOR PRESSURE EQUATION COEFFICIENTS
              A   B   C   D   MAX ERR AT P
EQUATION 1   7.0058   -1427.68   224.97   -.55 100.
EQUATION 2   59.669   -6514.7   -6.12   7.4715   .20   30.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
                  VOL PER   REF   VOL PER   REF
                   0.95   8(DD)

AUTOIGNITION TEMPERATURE
        DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                          STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

141

CIS-1-METHYL-3-ETHYLCYCLOPENTANE

SYNONYMS.
FORMULA= C8H16   C/H= 5.958 MW= 112.217 VD= 3.8695

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF LIQUID   (NET)   1167.90   10408.   11
                     (GROSS)   1252.06   11158.   11
HEAT OF VAPORIZATION(25 C)
----
                 20 C   REF   25 C   REF   30 C   REF
DENSITY (GRAM/ML) .7724   19   .7681   19   .7638   19
REFRACTIVE INDEX 1.4203   19   1.4179   19   1.4151   19
SURFACE TENSION 23.68   19   22.64   19
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T -21.0   13.1   33.5   60.3   121.4   19

 VAPOR PRESSURE EQUATION COEFFICIENTS
            A   B   C   D   MAX ERR AT P
EQUATION 1 7.0196 -1434.85   225.38   -.68   100.
EQUATION 2 55.319 -6340.0   -5.46   .4491   -.05   30.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
               VOL PER   REF   VOL PER   REF
               0.95   8(DD)

AUTOIGNITION TEMPERATURE
     DEG C   DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                         STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

142

TRANS-1-METHYL-3-ETHYLCYCLOPENTANE

SYNONYMS.
FORMULA= C8H16   C/H= 5.958 MW= 112.217 VD= 3.8695

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF LIQUID   (NET)   1168.70   10415.   11
                    (GROSS)   1252.86   11165.   11
HEAT OF VAPORIZATION(25 C)
----
                    20 C   REF   30 C   REF
DENSITY (GRAM/ML)   .7619   19   .7535   19
REFRACTIVE INDEX   1.4186 19   1.4137 19
SURFACE TENSION   22.42   19   21.44   19
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   -22.0   12.4   32.8   59.7   120.8   19

 VAPOR PRESSURE EQUATION COEFFICIENTS
            A   B   C   D   MAX ERR AT P
EQUATION 1 7.0777   -1470.86   229.78   .99   10.
EQUATION 2 47.143   -5944.3   -4.25   -6.7429   -.30   30.

FLASH POINT(DEG C) (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
                VOL PER   REF   VOL PER   REF
                0.95   8(DD)

AUTOIGNITION TEMPERATURE
      DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                        STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

143

N-PROPYLCYCLOPENTANE

SYNONYMS.
FORMULA= C8H16   C/H= 5.958   MW= 112.217   VD= 3.8695

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	1169.58	10423.	11
	(GROSS)	1253.74	11172.	11
HEAT OF VAPORIZATION(25 C)		9.91	88.31	11

---

	20 C	REF	25 C	REF	40 C	REF
DENSITY (GRAM/ML)	.77633	11	.77229	11		
REFRACTIVE INDEX	1.42626	11	1.42389	11		
SURFACE TENSION	24.17	19			22.20	19
VISCOSITY (CS)	.878	19			.711	19

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	-13.3	21.2	41.9		69.1		130.9	19

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	7.0270	-1457.95	220.76		.50	10.
EQUATION 2	63.308	-6922.5	-6.60	7.8065	.00	30.

FLASH POINT(DEG C)	(CC)	REF	(OC)	REF
	19.0	19(AY)		

FLAMMABLE LIMITS	LOWER		UPPER	
	VOL PER	REF	VOL PER	REF
	.95	8(DD)		

AUTOIGNITION TEMPERATURE

DEG C	DELAY(SEC)	REF	DEG C	REF
285.		46		

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

ISOPROPYLCYCLOPENTANE

SYNONYMS.
FORMULA= C8H16   C/H= 5.958 MW= 112.217 VD= 3.8695

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF LIQUID   (NET)   1169.80   10424.   11
                    (GROSS)   1253.96   11174.   11
HEAT OF VAPORIZATION(25 C)
----
                    20 C   REF   25 C   REF   30 C   REF
DENSITY (GRAM/ML) .77653   11   .77259   11   .76864   19
REFRACTIVE INDEX 1.42582   11   1.42350   11   1.42124   19
SURFACE TENSION   24.19   19   23.22   19
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   -18.4   16.3   37.1   64.3   126.4   19

VAPOR PRESSURE EQUATION COEFFICIENTS
              A   B   C   D   MAX ERR AT P
EQUATION 1   7.0289   -1464.58   226.74   .65   10.
EQUATION 2   53.938   -6321.2   -5.26   1.4158   -.09   30.

FLASH POINT(DEG C) (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
                 VOL PER   REF   VOL PER   REF
                   .95   8(DD)

AUTOIGNITION TEMPERATURE
       DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CH/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                            STOICH REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

145

CYCLONONANE

SYNONYMS.
FORMULA= C9H18   C/H= 5.958 MW= 126.244 VD= 4.3532

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF LIQUID   (NET)   1314.30   10411.   11
                     (GROSS)   1408.98   11161.   11
HEAT OF VAPORIZATION(25 C)
----
                     20 C   REF   25 C   REF
DENSITY (GRAM/ML)   .8502   11   .8463   11
REFRACTIVE INDEX   1.4666   11   1.4644   11
SURFACE TENSION
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   178.4   11

 VAPOR PRESSURE EQUATION COEFFICIENTS
               A   B   C   D   MAX ERR AT P
EQUATION 1
EQUATION 2

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
               VOL PER   REF   VOL PER   REF
                0.85   8(DD)

AUTOIGNITION TEMPERATURE
        DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                            STOICH REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

146

N-PROPYLCYCLOHEXANE

SYNONYMS.
FORMULA= C9H18   C/H= 5.958 MW= 126.244 VD= 4.3532

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF LIQUID   (NET)   1309.66   10374.   11
                        (GROSS) 1404.34   11124.   11
HEAT OF VAPORIZATION(25 C)   10.78   85.39   11
----
                        20 C   REF   25 C   REF   40 C   REF
DENSITY (GRAM/ML) .79360   11   .78977   11
REFRACTIVE INDEX 1.43705 11   1.43478 11
SURFACE TENSION   25.40   19   23.49   19
VISCOSITY (CS)   1.268   19   .976   19

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   4.0   40.1   62.1   91.0   156.7   19

 VAPOR PRESSURE EQUATION COEFFICIENTS
            A   B   C   D   MAX ERR AT P
EQUATION 1 6.9005   -1470.29   209.05   -.01   30.
EQUATION 2 83.696   -8335.6   -9.53   32.8230   .11   30.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
              VOL PER   REF   VOL PER   REF
                0.85   8(DD)

AUTOIGNITION TEMPERATURE
        DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                        STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

147

ISOPROPYLCYCLOHEXANE

SYNONYMS.
FORMULA= C9H16   C/H= 5.958 MW= 126.244 VD= 4.3532

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF LIQUID   (NET)   1311.90   10392.   11
                     (GROSS)   1406.58   11142.   11
HEAT OF VAPORIZATION(25 C)
----
                    20 C   REF   25 C   REF   30 C   REF
DENSITY (GRAM/ML) .80221   11   .79833   11   .79448   19
REFRACTIVE INDEX 1.44087   11   1.43861   11   1.43639   19
SURFACE TENSION   26.53   19   25.51   19
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   1.6   38.3   60.2   89.0   154.5   19

VAPOR PRESSURE EQUATION COEFFICIENTS
            A   B   C   D   MAX ERR AT P
EQUATION 1 7.0552 -1562.22 219.83   -.65 100.
EQUATION 2 58.646 -7078.4   -5.86   2.6598   -.03   30.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
                VOL PER   REF   VOL PER   REF
                 0.85   8(DD)

AUTOIGNITION TEMPERATURE
      DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                             STOICH REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

148

1-METHYL-3-ISOPROPYLCYCLOPENTANE

SYNONYMS.
FORMULA= C9H18   C/H= 5.958 MW= 126.244 VD= 4.3532

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF LIQUID   (NET)   1310.80   10383.   11
                      (GROSS)   1405.48   11133.   11
HEAT OF VAPORIZATION(25 C)
----
                      20 C   REF   25 C   REF
DENSITY (GRAM/ML) .780   11   .777   11
REFRACTIVE INDEX 1.426   11   1.424   11
SURFACE TENSION
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   142.2   11

 VAPOR PRESSURE EQUATION COEFFICIENTS
               A   B   C   D   MAX ERR AT P
EQUATION 1
EQUATION 2

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
             VOL PER   REF   VOL PER   REF
              0.85   8(DD)

AUTOIGNITION TEMPERATURE
     DEG C   DELAY.SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                        STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

CIS-1,2-DIETHYLCYCLOPENTANE

SYNONYMS.
FORMULA= C9H18   C/H= 5.958   MW= 126.244 VD= 4.3532

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF LIQUID   (NET)   1309.90   10376.   11
                      (GROSS)   1404.58   11126.   11
HEAT OF VAPORIZATION(25 C)
----
                      20 C   REF   25 C   REF
DENSITY (GRAM/ML) .7960   11   .7920   11
REFRACTIVE INDEX 1.4355   11   1.4330   11
SURFACE TENSION
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   153.6   11

 VAPOR PRESSURE EQUATION COEFFICIENTS
               A   B   C   D   MAX ERR AT P
EQUATION 1
EQUATION 2

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
              VOL PER   REF   VOL PER   REF
                 0.85   8(DD)

AUTOIGNITION TEMPERATURE
        DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                           STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

150

TRANS-1,2-DIETHYLCYCLOPENTANE

SYNONYMS.
FORMULA= C9H18   C/H= 5.958 MW= 126.244 VD= 4.3532

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF LIQUID   (NET)   1310.20   10378.   11
                      (GROSS)   1404.88   11128.   11
HEAT OF VAPORIZATION(25 C)
----
                      20 C   REF   25 C   REF
DENSITY (GRAM/ML) .7832   11   .7792   11
REFRACTIVE INDEX 1.4295   11   1.4270   11
SURFACE TENSION
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   147.5   11

 VAPOR PRESSURE EQUATION COEFFICIENTS
               A   B   C   D   MAX ERR AT P
EQUATION 1
EQUATION 2

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
                 VOL PER   REF   VOL PER   REF
                   0.85   8(DD)

AUTOIGNITION TEMPERATURE
      DEG C   DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                              STOICH REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

N-BUTYLCYCLOPENTANE

SYNONYMS.
FORMULA= C9H18   C/H= 5.958 MW= 126.244 VD= 4.3532

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF LIQUID   (NET)   1315.42   10420.   11
                    (GROSS)   1410.10   11170.   11
HEAT OF VAPORIZATION(25 C)   11.00   87.13   11
----
                    20 C   REF   25 C   REF   40 C   REF
DENSITY (GRAM/ML) .7846   11   .7808   11
REFRACTIVE INDEX 1.4316   11   1.4293   11
SURFACE TENSION   24.93   19   23.04   19
VISCOSITY (CS)   1.134   19   .889   19

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   5.3   41.6   63.3   91.8   156.6   19

 VAPOR PRESSURE EQUATION COEFFICIENTS
              A   B   C   D   MAX ERR AT P
EQUATION 1 7.0515 -1542.98   213.49   .63   10.
EQUATION 2 66.920 -7635.4   -7.02   6.2998   -.05   30.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
               VOL PER   REF   VOL PER   REF
                  .85   8(DD)

AUTOIGNITION TEMPERATURE
       DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                          STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

ISOBUTYLCYCLOPENTANE

SYNONYMS.
FORMULA= C9H18   C/H= 5.958   MW= 126.244   VD= 4.3532

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF LIQUID   (NET)   1311.80   10391.   11
                          (GROSS)   1405.48   11141.   11
HEAT OF VAPORIZATION(25 C)
----
                   20 C   REF   25 C   REF
DENSITY (GRAM/ML) .7809   11   .7769   11
REFRACTIVE INDEX   1.4298 11   1.4273 11
SURFACE TENSION
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   147.9   11

  VAPOR PRESSURE EQUATION COEFFICIENTS
               A   B   C   D   MAX ERR AT P
EQUATION 1
EQUATION 2

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
               VOL PER   REF   VOL PER   REF
                 .85   8(DD)

AUTOIGNITION TEMPERATURE
        DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                               STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

153

SEC-BUTYLCYCLOPENTANE

SYNONYMS.
FORMULA= C9H18   C/H= 5.958 MW= 126.244 VD= 4.3532

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF LIQUID   (NET)   1311.30   1C387.   11
                      (GROSS)   1405.98   11137.   11
HEAT OF VAPORIZATION(25 C)
----
                      20 C   REF   25 C   REF
DENSITY (GRAM/ML) .7945   11   .7905   11
REFRACTIVE INDEX 1.4357   11   1.4332   11
SURFACE TENSION
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   154.4   11

  VAPOR PRESSURE EQUATION COEFFICIENTS
                A   B   C   D   MAX ERR AT P
EQUATION 1
EQUATION 2

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
              VOL PER   REF   VOL PER   REF
                .85   8(DD)

AUTOIGNITION TEMPERATURE
      DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                          STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

T-BUTYLCYCLOPENTANE

SYNONYMS.
FORMULA= C9H18   C/H= 5.958 MW= 126.244 VD= 4.3532

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF LIQUID   (NET)   1309.40   10372.   11
                      (GROSS) 1404.08   11122.   11
HEAT OF VAPORIZATION(25 C)
----
                       20 C   REF   25 C   REF
DENSITY (GRAM/ML) .7910   11   .7870   11
REFRACTIVE INDEX 1.4338   11   1.4313   11
SURFACE TENSION
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   144.9   11

  VAPOR PRESSURE EQUATION COEFFICIENTS
             A   B   C   D   MAX ERR AT P
EQUATION 1
EQUATION 2

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
              VOL PER   REF   VOL PER   REF
                .85   8(DD)

AUTOIGNITION TEMPERATURE
      DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                         STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

155

DIETHYLCYCLOHEXANE

SYNONYMS.
FORMULA= C10H20   C/H= 5.958 MW= 140.271 VD= 4.8369

                           KCAL/MOLE   CAL/GRAM   REF
HEAT OF COMBUSTION (NET)
                 (GROSS)
HEAT OF VAPORIZATION(25 C)

DENSITY (GRAM/ML)
REFRACTIVE INDEX
SURFACE TENSION
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   173.4   3

  VAPOR PRESSURE EQUATION COEFFICIENTS
              A   B   C   D   MAX ERR AT P
EQUATION 1
EQUATION 2

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                     49.0   3

FLAMMABLE LIMITS   LOWER   UPPER
              VOL PER   REF   VOL PER   REF
              .8 AT 60 C   3   .6 AT 110 C   3

AUTOIGNITION TEMPERATURE
     DEG C   DELAY(SEC) REF   DEG C   REF
     242.   3

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                            STOICH REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

156

N-BUTYLCYCLOHEXANE

SYNONYMS.
FORMULA= C10H20   C/H= 5.958   MW= 140.271   VD= 4.8369

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF LIQUID   (NET)   1455.58   10377.   11
                      (GROSS)   1560.78   11127.   11
HEAT OF VAPORIZATION(25 C)   11.96   85.26   11
----
                   20 C   REF   30 C   REF   50 C   REF
DENSITY (GRAM/ML) .79918   11   .79184   19
REFRACTIVE INDEX 1.44075 11   1.43647 19
SURFACE TENSION   25.94   19   25.00   19
VISCOSITY (CS)   1.406   19   1.069   19

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   20.3   59.0   82.1   112.3   180.9   19

VAPOR PRESSURE EQUATION COEFFICIENTS
             A   B   C   D   MAX ERR AT P
EQUATION 1 7.0876 -1661.28 214.04   .54   10.
EQUATION 2 64.040 -7855.7   -6.56   8.0010   .02   10.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
                VOL PER   REF   VOL PER   REF
                 0.75   8(DD)

AUTOIGNITION TEMPERATURE
        DEG C   DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                          STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

CIS-DECALIN

SYNONYMS. CIS-DECAHYDRONAPHTHALENE
FORMULA= C10H18   C/H= 6.620   MW= 138.255   VD= 4.7674

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF LIQUID   (NET)   1408.24   10186.   11
                          (GROSS)   1502.92   10871.   11
HEAT OF VAPORIZATION(25 C)
----

                    20 C   REF   25 C   REF   30 C   REF
DENSITY (GRAM/ML) .8965   11   .8925   11   .8885   19
REFRACTIVE INDEX   1.4810   11   1.4788   11   1.4766   19
SURFACE TENSION   32.51   19   31.36   19
VISCOSITY (CS.)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   22.5   64.2   97.2   123.2   169.9   194.6   21

 VAPOR PRESSURE EQUATION COEFFICIENTS
              A   B   C   D   MAX ERR AT P
EQUATION 1   7.3579 -1977.31 246.35   -2.10   10.
EQUATION 2   64.002 -7602.1   -6.73   75.5636   -.62   400.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                     58.0   (1,3,4)(JJ)

FLAMMABLE LIMITS   LOWER   UPPER
                  VOL PER   REF   VOL PER   REF
                 .7 AT 100 C 3(JJ)   4.9 AT 100 C 3(JJ)

AUTOIGNITION TEMPERATURE
     DEG C   DELAY(SEC)   REF   DEG C   REF
     250.   3(JJ)   262.   (1,4)(JJ)
     271.   46(JJ)
     272.   18.   49(JJ)   280.   24(B,JJ)
     262.   54(JJ)

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                         STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

TRANS-DECALIN

SYNONYMS.
FORMULA= C10H18   C/H= 6.620   MW= 138.255   VD= 4.7674

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF LIQUID   (NET)   1405.55   10166.   11
                        (GROSS) 1500.23   10851.   11
HEAT OF VAPORIZATION(25 C)
----

                   20 C   REF   25 C   REF   30 C   REF
DENSITY (GRAM/ML) .8699   11   .8659   11   .8619   19
REFRACTIVE INDEX   1.4695 11   1.4672 11   1.4650 19
SURFACE TENSION   28.82   19   27.77   19
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   -.8   47.2   85.7   114.6   160.1   186.7   21

 VAPOR PRESSURE EQUATION COEFFICIENTS
             A   B   C   D   MAX ERR AT P
EQUATION 1 8.9502 -3544.78   397.21   -5.85   10.
EQUATION 2 -3.499 -3291.2   2.78   74.4129   -5.64 400.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                     58.0   (1,3,4)(JJ)

FLAMMABLE LIMITS   LOWER   UPPER
                 VOL PER   REF   VOL PER   REF
                 .7 AT 100 C   3(JJ)   4.9 AT 100 C   3(JJ)

AUTOIGNITION TEMPERATURE
     DEG C DELAY(SEC) REF   DEG C   REF
     250.   3(JJ)   262.   (1,4)(JJ)
     272.   18.   49(JJ)   280.   24(8,JJ)
     262.   54(JJ)
     271.   46(JJ)

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL
    33.9 (62)(P)   2290 (62)   1.58 (73)
                           STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

1-METHYL-2-T-BUTYLCYCLOHEXANE

SYNONYMS.
FORMULA= C11H22   C/H= 5.958 MW= 154.298 VD= 5.3206

                        KCAL/MOLE   CAL/GRAM   REF
HEAT OF COMBUSTION (NET)
                   (GROSS)
HEAT OF VAPORIZATION(25 C)

DENSITY (GRAM/ML)
REFRACTIVE INDEX
SURFACE TENSION
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T

 VAPOR PRESSURE EQUATION COEFFICIENTS
               A   B   C   D   MAX ERR AT P
EQUATION 1
EQUATION 2

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
            VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
     DEG C DELAY(SEC) REF   DEG C   REF
     314.   12.   49

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                        STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

160

1-METHYL-3-T-BUTYLCYCLOHEXANE (LOW BOILING)

SYNONYMS.
FORMULA= C11H22   C/H= 5.958 MW= 154.298 VD= 5.3206

                             KCAL/MOLE   CAL/GRAM   REF
HEAT OF COMBUSTION (NET)
                  (GROSS)
HEAT OF VAPORIZATION(25 C)

DENSITY (GRAM/ML)
REFRACTIVE INDEX
SURFACE TENSION
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T

 VAPOR PRESSURE EQUATION COEFFICIENTS
                 A   B   C   D   MAX ERR AT P
EQUATION 1
EQUATION 2

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
                VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
     DEG C   DELAY(SEC)   REF   DEG C   REF
     291.   24.   49

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                        STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

161

1-METHYL-3-T-BUTYLCYCLOHEXANE (HIGH BOILING)

SYNONYMS.
FORMULA= C11H22   C/H= 5.958   MW= 154.298   VD= 5.3206

                          KCAL/MOLE   CAL/GRAM   REF
HEAT OF COMBUSTION (NET)
                  (GROSS)
HEAT OF VAPORIZATION(25 C)

DENSITY (GRAM/ML)
REFRACTIVE INDEX
SURFACE TENSION
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T

 VAPOR PRESSURE EQUATION COEFFICIENTS
                    A   B   C   D   MAX ERR AT P
EQUATION 1
EQUATION 2

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
                VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
     DEG C   DELAY(SEC)   REF   DEG C   REF
     304.   12.   49

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                          STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

BICYCLOHEXYL

SYNONYMS. DICYCLOHEXYL
FORMULA= C12H22   C/H= 6.500 MW= 166.309 VD= 5.7348

                          KCAL/MOLE   CAL/GRAM   REF
HEAT OF COMBUSTION (NET)
                  (GROSS)
HEAT OF VAPORIZATION(25 C)
----
                  20 C   REF   25 C   REF
DENSITY (GRAM/ML) .8917   2   .883   1
REFRACTIVE INDEX 1.4766   2
SURFACE TENSION
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   240.0   1

  VAPOR PRESSURE EQUATION COEFFICIENTS
              A   B   C   D   MAX ERR AT P
EQUATION 1
EQUATION 2

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                     101.5   1
                      74.0   3

FLAMMABLE LIMITS   LOWER   UPPER
            VOL PER   REF   VOL PER   REF
          .7 AT 100 C 3   5.1 AT 150 C 3

AUTOIGNITION TEMPERATURE
    DEG C DELAY(SEC) REF   DEG C   REF
    104.5   1   244.   3

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                        STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

163

DIMETHYLDECALIN (ISOMERS)

SYNONYMS.
FORMULA= C12H22   C/H= 6.500 MW= 166.309 VD= 5.7348

                         KCAL/MOLE   CAL/GRAM   REF
HEAT OF COMBUSTION (NET)
                 (GROSS)
HEAT OF VAPORIZATION(25 C)

DENSITY (GRAM/ML)
REFRACTIVE INDEX
SURFACE TENSION
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   235.0   3

 VAPOR PRESSURE EQUATION COEFFICIENTS
              A   B   C   D   MAX ERR AT P
EQUATION 1
EQUATION 2

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                      84.5   3(KK)

FLAMMABLE LIMITS   LOWER   UPPER
              VOL PER   REF   VOL PER   REF
              .7 AT 93.5 C   3   5.3 AT 149 C   3

AUTOIGNITION TEMPERATURE
     DEG C DELAY(SEC) REF   DEG C   REF
     234.   3

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                         STOICH REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

164

N-BUTYLDECAL:N

SYNONYMS.
FORMULA= C14H26   C/H= 6.416   MW= 194.363 VD= 6.7022

                              KCAL/MOLE   CAL/GRAM   REF
HEAT OF COMBUSTION (NET)
                  (GROSS)
HEAT OF VAPORIZATION(25 C)

DENSITY (GRAM/ML)
REFRACTIVE INDEX
SURFACE TENSION
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T

 VAPOR PRESSURE EQUATION COEFFICIENTS
               A   B   C   D   MAX ERR AT P
EQUATION 1
EQUATION 2

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                      260.0 1,3,4

FLAMMABLE LIMITS   LOWER   UPPER
                VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
        DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                            STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

165

T-BUTYLDECALIN

SYNONYMS.
FORMULA= C14H26   C/H= 6.416   MW= 194.363   VD= 6.7022

                              KCAL/MOLE   CAL/GRAM   REF
HEAT OF COMBUSTION (NET)
                   (GROSS)
HEAT OF VAPORIZATION(25 C)

DENSITY (GRAM/ML)
REFRACTIVE INDEX
SURFACE TENSION
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T

 VAPOR PRESSURE EQUATION COEFFICIENTS
                 A   B   C   D   MAX ERR AT P
EQUATION 1
EQUATION 2

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                     338.0   1,3,4

FLAMMABLE LIMITS   LOWER   UPPER
              VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
        DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                          STOICH REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

166

MONOISOPROPYLBICYCLOHEXYL

SYNONYMS.
FORMULA= C15H28   C/H= 6.384 MW= 208.390 VD= 7.1859

                              KCAL/MOLE   CAL/GRAM   REF
HEAT OF COMBUSTION (NET)
                 (GROSS)
HEAT OF VAPORIZATION(25 C)

DENSITY (GRAM/ML)
REFRACTIVE INDEX
SURFACE TENSION
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   280.0   3

 VAPOR PRESSURE EQUATION COEFFICIENTS
              A   B   C   D   MAX ERR AT P
EQUATION 1
EQUATION 2

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                     124.0 3

FLAMMABLE LIMITS   LOWER   UPPER
                VOL PER   REF   VOL PER   REF
                .5 AT 150 C 3   4.1 AT 204.5 C   3

AUTOIGNITION TEMPERATURE
     DEG C DELAY(SEC) REF   DEG C   REF
     228.   3

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                              STOICH REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

ETHENE

SYNONYMS. ETHYLENE,ELAYL,ETHERIN
FORMULA= C2H4   C/H= 5.958 MW= 28.054   VD=   .9674

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF GAS   (NET)   316.20   11271.   11
                      (GROSS)   337.24   12021.   11
HEAT OF VAPORIZATION(25 C)
----
                      20 ᴜ   REF
DENSITY (GRAM/ML)
REFRACTIVE INDEX
SURFACE TENSION   16.5   (8)(60)(R)
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T -168.3 -153.2   -141.3 -131.8 -113.9 -103.7   21

VAPOR PRESSURE EQUATION COEFFICIENTS
              A   B   C   D   MAX ERR AT P
EQUATION 1   .8062   -21.19   95.01   1145.45   1.
EQUATION 2   49.623   -2529.8   -5.48   2.5441   .14   40.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                      -136.   (8)(9)
                      -120.5 4

FLAMMABLE LIMITS   LOWER   UPPER
                 VOL PER   REF   VOL PER   REF
                   2.6   13(V)   32.   3,12(A)
                   2.7   4,(8)(15)   34.   1,4,(8)(15)
                   3.0   1   41.   13(V)
                   2.90   66(B)   79.9   66(B)
                   3.05   66   28.6   66
                   3.1   3,12(A),67
                   3.0   12(A,B)   80.   12(A,B)

AUTOIGNITION TEMPERATURE
     DEG C   DELAY(SEC)   REF   DEG C   REF
     543.   1   490.   (22)(32)
     450.   3,4   485.   (22)(32)(B)

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL
     68.3   (69)   2387 (55)   7.40 (69)
                         STOICH REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)= .096   (7)(57)   .124   58
QUENCHING DISTANCE(CM)=   .13   7

168

PROPENE

SYNONYMS. PROPYLENE
FORMULA= C3H6   C/H= 5.958   MW= 42.081   VD= 1.4511

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF GAS   (NET)   460.43   10941.   11
                         (GROSS)   491.99   11691.   11
HEAT OF VAPORIZATION(25 C)
----
                    20 C   REF   25 C   REF
DENSITY (GRAM/ML) .5139   11(D)   .5053   11(D)
REFRACTIVE INDEX
SURFACE TENSION   16.7   (8)(60)(R)
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T -131.9 -112.1   -96.5   -84.1   -60.9   -47.7   21

 VAPOR PRESSURE EQUATION COEFFICIENTS
            A   B   C   D   MAX ERR AT P
EQUATION 1 1.7188   4.98   106.74   3217.93   1.
EQUATION 2 55.901 -3571.8 -6.18   5.5142   -.28   10.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                      -108. 4,(8)(9)

FLAMMABLE LIMITS   LOWER   UPPER
             VOL PER   REF   VOL PER   REF
             2.0   4,(8)(15),66   10.   (8)(15)
             2.13   (7)(14)(H)   12.1   (7)(14)(H)
             2.2   13(V)   11.1   13(V),66
             2.10   66(B)   52.8   66(B)
             2.4   3,12(A),71(AK) 10.3   3,12(A),71(AK)
                                     11.1   4
             2.1   12(A,B)   53.   12(A,B)

AUTOIGNITION TEMPERATURE
     DEG C   DELAY(SEC)   REF   DEG C   REF
     410.   3   497.   1,6
     455.   28(AL)

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL
    43.8 (69)   2341 (55)   5.04 (69)
                          STOICH REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)= .282   (7)(57)
QUENCHING DISTANCE(CM)=   .20   7

169

1-BUTENE

SYNONYMS. ALPHA-BUTYLENE, ETHYLETHYLENE
FORMULA= C4H8   C/H= 5.958   MW= 56.108   VD= 1.9348

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	602.50	10738.	11
	(GROSS)	644.58	11488.	11
HEAT OF VAPORIZATION(25 C)		4.87	86.80	11

----

	20 C	REF	25 C	REF
DENSITY (GRAM/ML)	.5951	11(D)	.5888	11(D)
REFRACTIVE INDEX				
SURFACE TENSION	12.53	(8)(60)		
VISCOSITY (CS)				

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	-104.8	-81.6		-63.4	-48.9	-21.7	-6.3	21

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	6.8402	-925.78	240.14		.18	10.
EQUATION 2	61.048	-4415.7	-6.79	7.6693	.11	40.

FLASH POINT(DEG C)	(CC)	REF	(OC)	REF
	-80.	1,4,(8)(9)		

FLAMMABLE LIMITS   LOWER   UPPER

	VOL PER	REF	VOL PER	REF
	1.6	12(A)	9.3	12(A)
	1.6	3,4,(8)(15)	9.3	3,(8)(60)
	1.7	1,13(V)	9.0	1
	2.0	12(A,LL)	9.6	4,12(A,LL)
			11.	13(V)
	1.8	12(A,B)	58.	12(A,B)

AUTOIGNITION TEMPERATURE

DEG C	DELAY(SEC)	REF	DEG C	REF
384.		3,4	443.	28(LL,AL)

MAX FLAME VEL(CM/SEC)	FLAME TEMP(DEG K)	VOL PERCENT FUEL
43.2 (69)	2320 (55)	3.87 (69)
	STOICH REF	ABS MIN REF

MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

CIS-2-BUTENE

SYNONYMS. PSEUDOBUTYLENE, DIMETHYLETHYLENE, SYM-DIMETHYLETHYLENE
FORMULA= C4H8   C/H= 5.958 MW= 56.108 VD= 1.9348

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF LIQUID   (NET)   600.43   10701.   11
                     (GROSS)   642.51   11451.   11
HEAT OF VAPORIZATION(25 C)   5.30   94.46   11
----
                 20 C   REF   25 C   REF   30 C   REF
DENSITY (GRAM/ML) .6213 11(D)   .6154 11(D)   .5094   20 .
REFRACTIVE INDEX
SURFACE TENSION 15.07   20   13.90   20
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T -96.4 -73.4   -54.7   -39.8   -12.0   3.7   21

 VAPOR PRESSURE EQUATION COEFFICIENTS
             A   B   C   D   MAX ERR AT P
EQUATION 1 6.6521   -873.67   227.78   -1.63   10.
EQUATION 2 99.520   -5905.2   -12.78   29.2039   -1.06   400.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                    -73.5 10(DD)

FLAMMABLE LIMITS   LOWER   UPPER
           VOL PER   REF   VOL PER   REF
            1.7   12(A,B)   55.   12(A,B)
            2.0   12(A,LL)   9.6   12(A,LL)
            1.7   6   9.0   6
            1.8   4,12(A)   9.7   4,12(A)

AUTOIGNITION TEMPERATURE
    DEG C   DELAY(SEC) REF   DEG C   REF
    324.   4,6   443.   28(AL,LL)

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                          STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

171

TRANS-2-BUTENE

SYNONYMS. BETA-BUTYLENE
FORMULA= C4H8   C/H= 5.958 MW= 56.108 VD= 1.9348

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	599.58	10686.	11
	(GROSS)	641.66	11436.	11
HEAT OF VAPORIZATION(25 C)		5.15	91.79	11

----

	20 C	REF	25 C	REF	30 C	REF
DENSITY (GRAM/ML)	.6042	11(D)	.5984	11(D)	.5925	20
REFRACTIVE INDEX						
SURFACE TENSION	13.43	20			12.27	20
VISCOSITY (CS)						

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	-99.4	-76.3		-57.6	-42.7	-14.8	.9	21

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	6.6619	-878.86	231.36		-1.37	10.
EQUATION 2	90.522	-5496.4	-11.42	25.8338	-.81	10.

FLASH POINT(DEG C)	(CC)	REF	(OC)	REF
	-73.5	10(DD)		

FLAMMABLE LIMITS   LOWER   UPPER

	VOL PER	REF	VOL PER	REF
	1.8	3	9.7	3
	1.8	6,12(A)	9.7	6,12(A)
	2.0	12(A,LL)	9.6	12(A,LL)
	1.7	12(A,B)	55.	12(A,B)

AUTOIGNITION TEMPERATURE

DEG C	DELAY(SEC)	REF	DEG C	REF
324.		3,6	443.	28(AL,LL)

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                        STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

172

2-METHYLPROPENE

SYNONYMS. ISOBUTENE, ISOBUTYLENE, GAMMA-BUTYLENE
FORMULA= C4H8   C/H= 5.958 MW= 56.108 VD= 1.9348

HEAT OF COMBUSTION		KCAL./MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	598.44	10666.	11
	(GROSS)	640.52	11416.	11
HEAT OF VAPORIZATION(25 C)		4.92	87.69	11

---

	20 C	REF	25 C	REF	30 C	REF
DENSITY (GRAM/ML)	.5942	11(D)	.5879	11(D)	.5815	20
REFRACTIVE INDEX						
SURFACE TENSION	12.27	(8)(60)			11.22	20
VISCOSITY (CS)						

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	-105.1	-82.0	-67.9		-49.3		-6.9	20

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	6.8426	-923.70	240.05		-.04	30.
EQUATION 2	64.460	-4513.2	-7.34	10.3662	.07	30.

FLASH POINT(DEG C)	(CC)	REF	(OC)	REF
	-76.	(8)(9)		

FLAMMABLE LIMITS   LOWER   UPPER
                VOL PER   REF   VOL PER   REF
                  1.8   3,4,12(A)   8.8   3,4,12(A)

AUTOIGNITION TEMPERATURE
      DEG C DELAY(SEC) REF   DEG C   REF
      465.   1,3,4

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL
      37.5 (69)   2315 (55)   3.83 (69)
                          STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

i-PENTENE

SYNONYMS. PROPYLETHYLENE, METHYLBUTENE, ALPHA-N-AMYLENE
FORMULA= C5H10   C/H= 5.958 MW= 70.135 VD= 2.4185

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	748.16	10667.	11
	(GROSS)	800.76	11417.	11
HEAT OF VAPORIZATION(25 C)		6.09	86.80	11

----

	20 C	REF	25 C	REF
DENSITY (GRAM/ML)	.64050	11	.63533	11
REFRACTIVE INDEX	1.37148	11	1.36835	11
SURFACE TENSION	15.57	20	15.45	11
VISCOSITY (CS)	.373	(8)(60)		

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	-80.4	-54.5		-34.1	-17.7	12.8	30.1	21

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	6.7962	-1020.95	230.63		.33	100.
EQUATION 2	74.543	-5527.4	-8.72	16.5149	-.34	400.

FLASH POINT(DEG C)	(CC)	REF	(OC)	REF
	-51.	10(DD)	-18.	1,3,4

FLAMMABLE LIMITS

LOWER		UPPER	
VOL PER	REF	VOL PER	REF
1.4	4,(8)(15)	8.7	3,4,(8)(15)
1.5	3	7.7	1
1.6	1	10.0	7
1.27	7		

AUTOIGNITION TEMPERATURE

DEG C	DELAY(SEC)	REF	DEG C	REF
273.		1,3,4	273.	(22)(31)(PP)
273.		28(PP,AN)	381.	28(PP,AM)
298.	18.	49	276.	28(PP,AP)

MAX FLAME VEL(CM/SEC)	FLAME TEMP(DEG K)	VOL PERCENT FUEL
42.6 (69)	2316 (55)	3.07 (69)
	STOICH REF	ABS MIN REF

MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

174

CIS-2-PENTENE

SYNONYMS. SYM-METHYLETHYLETHYLENE
FORMULA= C5H10   C/H= 5.958 MW= 70.135 VD= 2.4185

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF LIQUID   (NET)   746.33   10641.   11
                        (GROSS)   798.93   11391.   11
HEAT OF VAPORIZATION(25 C)   6.41   91.39   11

---

                    20 C   REF   25 C   REF
DENSITY (GRAM/ML) .6556   11   .6504   11
REFRACTIVE INDEX 1.3830   11   1.3798   11
SURFACE TENSION   17.38   (8)(60)   16.8   11
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   -75.2   -48.7   -32.7   -11.4   36.9   20

 VAPOR PRESSURE EQUATION COEFFICIENTS
            A   B   C   D   MAX ERR AT P
EQUATION 1 6.8793   -1070.59   230.82   .19   10.
EQUATION 2 71.031   -5566.7   -8.11   13.5235   -.02   30.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                     -18.   1
                     -45.5   10(DD)

FLAMMABLE LIMITS   LOWER   UPPER
                VOL PER   REF   VOL PER   REF
                 1.33   7   9.35   7
                 1.4   8(DD)   8.7   12(A,NN)
                 1.5   12(A,NN)

AUTOIGNITION TEMPERATURE
        DEG C   DELAY(SEC)   REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL
    43.1   (62)   2242   (62)   3.38   (73)
                           STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)= .82   (7)(57)(E) .18   (7)(59)(F)
QUENCHING DISTANCE(CM)=   .33   7   .15   7

175

TRANS-2-PENTENE

SYNONYMS. SYM-METHYLETHYLETHYLENE
FORMULA= C5H10   C/H= 5.958 MW= 70.135 VD= 2.4185

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF LIQUID   (NET)   745.28   10626.   11
                        (GROSS)   797.88   11376.   11
HEAT OF VAPORIZATION(25 C)   6.38   90.97   11
----
                        20 C   REF   25 C   REF
DENSITY (GRAM/ML) .6482   11   .6431   11
REFRACTIVE INDEX 1.3793   11   1.3761   11
SURFACE TENSION 16.90   (8)(60)   16.42   11
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T -76.0 -49.4   -33.3   -12.0   36.4   20

 VAPOR PRESSURE EQUATION COEFFICIENTS
            A   B   C   D   MAX ERR AT P
EQUATION 1 6.9112 -1086.24   233.17   .08   10.
EQUATION 2 68.128 -5427.0   -7.68   13.5161   .06   30.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
  .   -18.   1
                     -45.5   10(DD)

FLAMMABLE LIMITS   LOWER   UPPER
                VOL PER   REF   VOL PER   REF
                  1.4   8(DD)   8.7   12(A,NN)
                  1.5   12(A,NN)

AUTOIGNITION TEMPERATURE
        DEG C   DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                            STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

CYCLOPENTENE

SYNONYMS.
FORMULA= C5H8   C/H= 7.448   MW= 68.120 VD= 2.3489

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF LIQUID   (NET)   702.47   10312.   11
                        (GROSS)   744.55   10930.   11
HEAT OF VAPORIZATION(25 C)   6.71   98.50   11
----
                        20 C   REF   25 C   REF   30 C   REF
DENSITY (GRAM/ML) .77199   11   .76653   11   .76104   19
REFRACTIVE INDEX   1.42246 11   1.41940 11   1.41612 19
SURFACE TENSION   22.65   19   21.32   19
VISCOSITY (CS)   .410   19

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   -71.4   -44.0   -27.4   -5.5   44.2   20

 VAPOR PRESSURE EQUATION COEFFICIENTS
             A   B   C   D   MAX ERR AT P
EQUATION 1 6.9264   -1124.37   233.73   .06   10.
EQUATION 2 65.922   -5455.1   -7.33   13.7646   .06   30.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                     -29.   1

FLAMMABLE LIMITS   LOWER   UPPER
                 VOL PER   REF   VOL PER   REF
                   1.5   8(DD)

AUTOIGNITION TEMPERATURE
        DEG C   DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL
    40.4   (72)   3.48   (72)
                         STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

2-METHYL-1-BUTENE

SYNONYMS.
FORMULA= C5H10   C/H= 5.958 MW= 70.135 VD= 2.4185

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF LIQUID   (NET)   744.39   10614.   11
                        (GROSS)   796.99   11364.   11
HEAT OF VAPORIZATION(25 C)   6.18   88.13   11
----

                    20 C   REF   25 C   REF
DENSITY (GRAM/ML) .6504   11   .6451   11
REFRACTIVE INDEX 1.3778   11   1.3746   11
SURFACE TENSION   16.50   (8)(60)   15.9   11
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T -89.1 -64.3   -44.1   -28.0   2.5   20.2   21

 VAPOR PRESSURE EQUATION COEFFICIENTS
              A   B   C   D   MAX ERR AT P
EQUATION 1   6.4941   -890.69   226.28   -1.07   10.
EQUATION 2   87.640   -5676.8   -10.89   25.0273   -.97   10.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                      -48.5   10(DD)

FLAMMABLE LIMITS   LOWER   UPPER
                VOL PER   REF   VOL PER   REF
                  1.4   8(DD)

AUTOIGNITION TEMPERATURE
        DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL
     39.0   (69)   2298 (55)   3.12 (69)
                            STOICH REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

3-METHYL-1-BUTENE

SYNONYMS. ALPHA-ISOAMYLENE
FORMULA= C5H10   C/H= 5.958   MW= 70.135   VD= 2.4185

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF LIQUID   (NET)   746.63   10646.   11
                         (GROSS)   799.23   11396.   11
HEAT OF VAPORIZATION(25 C)   5.70   81.27   11
----
                      20 C   REF   25 C   REF
DENSITY (GRAM/ML)   .6272   11   .6219   11(D)
REFRACTIVE INDEX   1.3643   11   1.3611   11(D)
SURFACE TENSION   14.40   (8)(60)   13.8   11(G)
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   -88.3   -62.9   -47.3   -26.8   20.1   20

 VAPOR PRESSURE EQUATION COEFFICIENTS
                  A   B   C   D   MAX ERR AT P
EQUATION 1   6.8158   -1009.03   236.35   -.37   10.
EQUATION 2   68.342   -5059.7   -7.85   15.8063   .43   30.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                     -56.5 10(DD)

FLAMMABLE LIMITS   LOWER   UPPER
               VOL PER   REF   VOL PER   REF
                 1.4   8(DD)

AUTOIGNITION TEMPERATURE
      DEG C   DELAY(SEC)   REF   DEG C   REF
      374.   6.   49

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL
     41.5 (69)   2305 (55)   3.11 (69)
                            STOICH REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

179

2-METHYL-2-BUTENE

SYNONYMS.
FORMULA= C5H!0   C/H= 5.958 MW= 70.135   VD= 2.4185

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF LIQUID   (NET)   742.61   10588.   11
                     (GROSS)   795.21   11338.   11
HEAT OF VAPORIZATION(25 C)   6.47   92.22   11
----
                    20 C   REF   25 C   REF
DENSITY (GRAM/ML)   .6623   11   .6570   11
REFRACTIVE INDEX   1.3874   11   1.3842   11
SURFACE TENSION   17.61   (8)(60) 17.14   11
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   -75.4   -47.9   -26.7   -9.9   21.6   38.5   21

 VAPOR PRESSURE EQUATION COEFFICIENTS
             A   B   C   D   MAX ERR AT P
EQUATION 1 7.1239   -1197.08   243.43   1.17   400.
EQUATION 2 55.962   -4968.2   -5.83   13.3146   .77   400.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                    -45.5 10(DD)

FLAMMABLE LIMITS   LOWER   UPPER
             VOL PER   REF   VOL PER   REF
               1.4   8(DD)

AUTOIGNITION TEMPERATURE
     DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                         STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

180

1-HEXENE

SYNONYMS. BUTYLETHYLENE, HEXYLENE
FORMULA= C6H12   C/H= 5.958   MW= 84.163   VD= 2.9022

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF LIQUID   (NET)   893.80   10620.   11
                     (GROSS)   956.92   11370.   11
HEAT OF VAPORIZATION(25 C)   7.34   87.21   11
----
                       20 C   REF   25 C   REF   37.78 C   REF
DENSITY (GRAM/ML)   .67317   11   .66848   11
REFRACTIVE INDEX   1.38788   11   1.38502   11
SURFACE TENSION   18.42   (8)(60) 17.90   11
VISCOSITY (CS)   .386   (8)(60)   .34   11

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   -57.5   -28.1   -5.0   13.0   46.8   66.0   21

 VAPOR PRESSURE EQUATION COEFFICIENTS
                 A   B   C   D   MAX ERR AT P
EQUATION 1   7.0052 -1237.56   234.16   .63   40.
EQUATION 2   56.582   -5461.8   -5.82   6.8055   .70   40.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                      -26.   10(DD)

FLAMMABLE LIMITS   LOWER   UPPER
                VOL PER   REF   VOL PER   REF
           1.2 AT 50 C   14(U)   9.0 AT 50 C   14(U)
                1.2   13(V)   8.0   13(V)
                1.2   8(DD)

AUTOIGNITION TEMPERATURE
     DEG C   DELAY(SEC)   REF   DEG C   REF
     272.   72.   49   325.   (22)(24)(B,RR)

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL
     42.1   (69)   2287 (55)   2.67   (69)
                          STOICH REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

CIS-2-HEXENE

SYNONYMS.
FORMULA= C6H12   C/H= 5.958 MW= 84.163 VD= 2.9022

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF LIQUID   (NET)   892.02   10599.   11
                      (GROSS)   955.14   11349.   11
HEAT OF VAPORIZATION(25 C)   7.52   89.35   11
----
                    20 C   REF   25 C   REF   30 C   REF
DENSITY (GRAM/ML) .68720   11   .68252   11   .6777   20
REFRACTIVE INDEX   1.39761 11   1.39473 11   1.3920   20
SURFACE TENSION   18.9   (8)(61)   18.34   20
VISCOSITY (CS)   .457   (8)(61)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   -54.2   -25.1   -7.5   15.9   68.8   20

VAPOR PRESSURE EQUATION COEFFICIENTS
            A   B   C   D   MAX ERR AT P
EQUATION 1 6.8998 -1184.14   225.82   -.27   30.
EQUATION 2 76.884 -6361.5   -8.88   21.6423   -.14   30.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                     -20.5 10(DD,SS)

FLAMMABLE LIMITS   LOWER   UPPER
              VOL PER   REF   VOL PER   REF
                 1.2   8(DD)

AUTOIGNITION TEMPERATURE
        DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                         STOICH REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

182

TRANS-2-HEXENE

SYNONYMS.
FORMULA= C6H12   C/H= 5.958 MW= 84.163 VD= 2.9022

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF LIQUID   (NET)   891.00   10587.   11
                      (GROSS)   954.12   11337.   11
HEAT OF VAPORIZATION(25 C)   7.54   89.59   11
----
                   20 C   REF   25 C   REF   30 C   REF
DENSITY (GRAM/ML) .67795   11   .67327   11   .6692   20
REFRACTIVE INDEX 1.39363 11   1.39073 11   1.3879   20
SURFACE TENSION   18.44   20   17.43   20
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   -54.9   -25.9   -8.3   15.0   67.9   20

 VAPOR PRESSURE EQUATION COEFFICIENTS
              A   B   C   D   MAX ERR AT P
EQUATION 1 6.8824 -1174.07 225.49   -.10   30.
EQUATION 2 76.632 -6331.8   -8.84   20.7225   .03   30.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                    -20.5   10(DD,SS)

FLAMMABLE LIMITS   LOWER   UPPER
               VOL PER   REF   VOL PER   REF
                 1.2   8(DD)

AUTOIGNITION TEMPERATURE
        DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL (CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                          STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

CYCLOHEXENE

SYNONYMS. 1,2,3,4-TETRAHYDROBENZENE
FORMULA= C6H10   C/H= 7.150 MW= 82.147 VD= 2.8326

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF LIQUID   (NET)   844.02   10275.   11
                     (GROSS)   896.62   10915.   11
HEAT OF VAPORIZATION(25 C)
----
                     20 C   REF   25 C   REF   30 C   REF
DENSITY (GRAM/ML)   .81096   11   .80609   11   .80141   19
REFRACTIVE INDEX   1.44654   11   1.44377 11   1.44110   19
SURFACE TENSION   26.54   19   25.22   19
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   -45.5   -15.1   3.3   27.6   83.0   19

 VAPOR PRESSURE EQUATION COEFFICIENTS
              A   B   C   D   MAX ERR AT P
EQUATION 1   6.8929   -1233.25   224.41   .21   10.
EQUATION 2   71.195   -6373.1   -7.96   15.9498   .04   30.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                     -29.5   1
                     -23.5   10(DD)

FLAMMABLE LIMITS   LOWER   UPPER
               VOL PER   REF   VOL PER   REF
                 1.2   8(DD)

AUTOIGNITION TEMPERATURE
     DEG C   DELAY(SEC)   REF   DEG C   REF
     325.   (22)(24)(B)

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL
     40.3   (72)
                          STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)= .86   (7)(57)(E)
QUENCHING DISTANCE(CM)=   .33   7

184

2-METHYL-1-PENTENE

SYNONYMS. 1-METHYL-1-PROPYLETHYLENE
FORMULA= C6H12   C/H= 5.958 MW= 84.163   VD= 2.9022

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	890.25	10578.	11
	(GROSS)	953.37	11328.	11
HEAT OF VAPORIZATION(25 C)		7.29	86.62	11

---

	20 C	REF	25 C	REF	30 C	REF
DENSITY (GRAM/ML)	.67987	11	.67505	11	.6720	20
REFRACTIVE INDEX	1.39200	11	1.38912	11	1.3856	20
SURFACE TENSION	18.78	20			17.70	20
VISCOSITY (CS)						

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	-59.8	-31.4	-14.1		8.8		60.7	20

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	6.8891	-1155.31	227.53		-.02	30.
EQUATION 2	73.413	-6067.7	-8.39	17.7370	.10	30.

FLASH POINT(DEG C)	(CC)	REF	(OC)	REF
	-28.	1		
	-26.	10(DD)		

FLAMMABLE LIMITS	LOWER		UPPER	
	VOL PER	REF	VOL PER	REF
	1.2	8(DD)		

AUTOIGNITION TEMPERATURE

DEG C	DELAY(SEC)	REF	DEG C	REF
306.	6.	49		

MAX FLAME VEL(CM/SEC)	FLAME TEMP(DEG K)	VOL PERCENT FUEL
39.6 (69)	2237 (55)	2.80 (69)
	STOICH REF	ABS MIN REF

MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

3-METHYL-1-PENTENE

SYNONYMS.
FORMULA= C6H12   C/H= 5.958   MW= 84.163   VD= 2.9022

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF LIQUID   (NET)   893.25   10613.   11
                      (GROSS)   956.37   11363.   11
HEAT OF VAPORIZATION(25 C)   6.83   81.15   11
----
                     20 C   REF   25 C   REF   30 C   REF
DENSITY (GRAM/ML) .66745   11   .66287   11   .6581   20
REFRACTIVE INDEX   1.38422   11   1.38133 11   1.3786   20
SURFACE TENSION   17.24   20   16.24   20
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T -64.3   -36.4   -19.4   3.1   54.1   20

 VAPOR PRESSURE EQUATION COEFFICIENTS
             A   B   C   D   MAX ERR AT P
EQUATION 1   6.8766   -1130.10   228.68   -.04   10.
EQUATION 2   73.228   -5930.1   -8.39   17.6849   .13   30.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
                VOL PER   REF   VOL PER   REF
                   1.2   8(DD)

AUTOIGNITION TEMPERATURE
        DEG C   DELAY(SEC)   REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                             STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

4-METHYL-1-PENTENE

SYNONYMS.
FORMULA= C6H12   C/H= 5.958 MW= 84.163 VD= 2.9022

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	892.58	10605.	11
	(GROSS)	955.70	11355.	11
HEAT OF VAPORIZATION(25 C)		6.86	81.51	11

---

	20 C	REF	25 C	REF	30 C	REF
DENSITY (GRAM/ML)	.66370	11	.65894	11	.6546	20
REFRACTIVE INDEX	1.38267	11	1.37974	11	1.3770	20
SURFACE TENSION	16.90	20			15.90	20
VISCOSITY (CS)						

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	-64.5	-36.6	-19.6		2.8		53.9	20

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	6.8775	-1129.62	228.76		.03	30.
EQUATION 2	73.105	-5920.9	-8.38	17.5804	.14	30.

FLASH POINT(DEG C)	(CC)	REF	(OC)	REF
	-31.5	10(DD)		

FLAMMABLE LIMITS	LOWER		UPPER	
	VOL PER	REF	VOL PER	REF
	1.2	8(DD)		

AUTOIGNITION TEMPERATURE

DEG C	DELAY(SEC)	REF	DEG C	REF
304.	12.	49		

MAX FLAME VEL(CM/SEC)	FLAME TEMP(DEG K)	VOL PERCENT FUEL
40.5 (69)	2295 (55)	2.62 (69)
	STOICH REF	ABS MIN REF

MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

2-METHYL-2-PENTENE

SYNONYMS.
FORMULA= C6H12   C/H= 5.958   MW= 84.163   VD= 2.9022

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF LIQUID   (NET)   888.59   10558.   11
                      (GROSS)   951.71   11308.   11
HEAT OF VAPORIZATION(25 C)   7.55   89.71   11
----

                      20 C   REF   25 C   REF   30 C   REF
DENSITY (GRAM/ML) .68650   11   .68187   11   .6767   20
REFRACTIVE INDEX 1.40030   11   1.39739 11   1.3945   20
SURFACE TENSION   19.32   20   18.22   20
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T -55.3   -26.4   -8.8   14.5   67.3   20

VAPOR PRESSURE EQUATION COEFFICIENTS
            A   B   C   D   MAX ERR AT P
EQUATION 1   6.8947   -1178.09   226.21   -.04   10.
EQUATION 2   74.966   -6254.7   -8.59   19.4109   .13   30.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                    -23.5   10(DD)

FLAMMABLE LIMITS   LOWER   UPPER
               VOL PER   REF   VOL PER   REF
                 1.2   8(DD)

AUTOIGNITION TEMPERATURE
       DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                         STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

188

4-METHYL-CIS-2-PENTENE

SYNONYMS. 1-ISOPROPYL-2-METHYLETHYLENE
FORMULA= C6H12   C/H= 5.958 MW= 84.163 VD= 2.9022

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	890.80	10584.	11
	(GROSS)	953.92	11334.	11
HEAT OF VAPORIZATION(25 C)		7.04	83.65	11

----

	20 C	REF	25 C	REF	30 C	REF
DENSITY (GRAM/ML)	.66918	11	.66441	11	.6593	20
REFRACTIVE INDEX	1.38793	11	1.38498	11	1.3820	20
SURFACE TENSION	17.41	20			16.38	20
VISCOSITY (CS)						

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	-62.8	-34.7	-17.6		5.0		56.3	20

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	6.8831	-1139.08	228.31		.02	30.
EQUATION 2	73.109	-5970.8	-8.36	17.4581	.11	30.

FLASH POINT(DEG C)	(CC)	REF	(OC)	REF
	-35.5	(8)(9)		

FLAMMABLE LIMITS	LOWER		UPPER	
	VOL PER	REF	VOL PER	REF
	1.2	8(DD)		

AUTOIGNITION TEMPERATURE

DEG C	DELAY(SEC)	REF	DEG C	REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                        STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

189

4-METHYL-TRANS-2-PENTENE

SYNONYMS. 1-ISOPROPYL-2-METHYLETHYLENE
FORMULA= C6H12   C/H= 5.958 MW= 84.163 VD= 2.9022

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	889.68	10571.	11
	(GROSS)	952.80	11321.	11
HEAT OF VAPORIZATION(25 C)		7.16	85.07	11

----

	20 C	REF	25 C	REF	30 C	REF
DENSITY (GRAM/ML)	.66862	11	.66380	11	.6590	20
REFRACTIVE INDEX	1.38878	11	1.38583	11	1.2831	20
SURFACE TENSION	17.37	20			16.35	20
VISCOSITY (CS)						

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	-61.3	-33.0	-15.8		6.9		58.6	20

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	6.0855	-1146.99	227.86		-.03	10.
EQUATION 2	73.495	-6029.3	-8.41	17.8083	.14	30.

FLASH POINT(DEG C)	( )	REF	(OC)	REF
	-29.	8(DD)		

FLAMMABLE LIMITS	LOWER		UPPER	
	VOL PER	REF	VOL PER	REF
	1.2	8(DD)		

AUTOIGNITION TEMPERATURE
      DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                         STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

2,3-DIMETHYL-1-BUTENE

SYNONYMS.
FORMULA= C6H12   C/H= 5.958 MW= 84.163 VD= 2.9022

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	889.35	10567.	11
	(GROSS)	952.47	11317.	11
HEAT OF VAPORIZATION(25 C)		6.97	82.82	11

---

	20 C	REF	25 C	REF	30 C	REF
DENSITY (GRAM/ML)	.67810	11	.67325	11	.6682	20
REFRACTIVE INDEX	1.39022	11	1.38729	11	1.3845	20
SURFACE TENSION	18.35	20			17.28	20
VISCOSITY (CS)						

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	-63.3	-35.2	-18.1		4.4		55.7	20

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	6.8816	-1136.50	228.40		-.01	100.
EQUATION 2	72.984	-5954.1	-8.35	17.2875	.12	30.

FLASH POINT(DEG C)	(CC)	REF	(OC)	REF
	-29.	10(DD)		

FLAMMABLE LIMITS	LOWER		UPPER	
	VOL PER	REF	VOL PER	REF
	1.2	8(DD)		

AUTOIGNITION TEMPERATURE

DEG C	DELAY(SEC)	REF	DEG C	REF
369.	6.	49		

MAX FLAME VEL(CM/SEC)	FLAME TEMP(DEG K)	VOL PERCENT FUEL
39.2 (62)	2206 (62)	3.83 (73)
	STOICH REF	ABS MIN REF

MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

191

3,3-DIMETHYL-1-BUTENE

SYNONYMS.
FORMULA= C6H12   C/H= 5.958 MW= 84.163 VD= 2.9022

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	890.49	10581.	11
	(GROSS)	953.61	11331.	11
HEAT OF VAPORIZATION(25 C)		6.36	75.57	11

----

	20 C	REF	25 C	REF	30 C	REF
DENSITY (GRAM/ML)	.65310	11	.64795	11	.6429	20
REFRACTIVE INDEX	1.37620	11	1.37313	11	1.3699	20
SURFACE TENSION	15.72	20			14.71	20
VISCOSITY (CS)						

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	-73.4	-46.4	-30.0		-8.3		41.2	20

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	6.8460	-1079.89	231.10		-.02	10.
EQUATION 2	71.329	-5599.6	-8.17	16.1248	.12	30.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS	LOWER		UPPER	
	VOL PER	REF	VOL PER	REF
	1.2	8(DD)		

AUTOIGNITION TEMPERATURE
        DEG C   DELAY(SEC)   REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                              STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

192

2-ETHYL-1-BUTENE

SYNONYMS.
FORMULA= C6H12   C/H= 5.958   MW= 84.163 VD= 2.9022

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF LIQUID   (NET)   890.77   10584.   11
                    (GROSS)   953.89   11334.   11
HEAT OF VAPORIZATION(25 C)   7.41   88.04   11
----
                    20 C   REF   25 C   REF   30 C   REF
DENSITY (GRAM/ML) .68958   11   .68481   11   .6800   20
REFRACTIVE INDEX   1.39671 11   1.39380 11   1.3912   20
SURFACE TENSION   19.66   20   18.57   20
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   -57.1 -28.3   -10.8   12.2   64.7   20

 VAPOR PRESSURE EQUATION COEFFICIENTS
              A   B   C   D   MAX ERR AT P
EQUATION 1   6.8954   -1170.01   226.78   .01   30.
EQUATION 2   74.117   -6173.0   -8.47   18.4530   .12   30.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
                VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
    DEG C DELAY(SEC) REF   DEG C   REF
    324.   6.   49

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL
    39.3 (69)   2284   (55)   2.65 (69)
                        STOICH REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

193

2,3-DIMETHYL-2-BUTENE

SYNONYMS.
FORMULA= C6H12   C/H= 5.958 MW= 84.163 VD= 2.9022

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	887.41	10544.	11
	(GROSS)	950.53	11294.	11
HEAT OF VAPORIZATION(25 C)		7.78	92.44	11

----

	20 C	REF	25 C	REF	30 C	REF
DENSITY (GRAM/ML)	.70810	11	.70347	11	.6988	20
REFRACTIVE INDEX	1.41235	11	1.40952	11	1.4065	20
SURFACE TENSION	21.90	20			20.75	20
VISCOSITY (CS)						

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	-51.3	-21.8	-3.9		19.6		73.2	20

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	6.9029	-1199.58	225.04		.01	100.
EQUATION 2	75.386	-6390.5	-8.62	19.6449	.11	30.

FLASH POINT(DEG C)	(CC)	REF	(OC)	REF
	-19.	10(DD)		

FLAMMABLE LIMITS	LOWER		UPPER	
	VOL PER	REF	VOL PER	REF
	1.2	8(DD)		

AUTOIGNITION TEMPERATURE

DEG C	DELAY(SEC)	REF	DEG C	REF
407.	6.	49		

MAX FLAME VEL(CM/SEC)	FLAME TEMP(DEG K)	VOL PERCENT FUEL	
37.2 (62)	2284 (62)	3.36 (73)	
	STOICH REF	ABS MIN REF	

MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

194

2-CYCLOPROPYLPROPENE

SYNONYMS.
FORMULA= C6H10   C/H= 7.150 MW= 82.147 VD= 2.8326

                              KCAL/MOLE   CAL/GRAM   REF
HEAT OF COMBUSTION (NET)
                  (GROSS)
HEAT OF VAPORIZATION(25 C)

DENSITY (GRAM/ML)
REFRACTIVE INDEX
SURFACE TENSION
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T

  VAPOR PRESSURE EQUATION COEFFICIENTS
                 A   B   C   D   MAX ERR AT P
EQUATION 1
EQUATION 2

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
               VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
       DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL
     44.9 (72)   2.85 (72)
                            STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

195

1-HEPTENE

SYNONYMS. ALPHA-N-HEPTYLENE
FORMULA= C7H14   C/H= 5.958   MW= 98.190   VD= 3.3858

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	1039.53	10587.	11
	(GROSS)	1113.17	11337.	11
HEAT OF VAPORIZATION(25 C)		8.52	86.77	11

---

	20 C	REF	25 C	REF	37.78 C	REF
DENSITY (GRAM/ML)	.69698	11	.69267	11		
REFRACTIVE INDEX	1.39980	11	1.39713	11		
SURFACE TENSION	20.30	(8)(60)	19.80	11		
VISCOSITY (CS)	.502	(8)(60)			.44	11

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	-37.0	-6.1	12.7		37.4		93.6	20

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	6.9007	-1257.52	219.18		-.02	10.
EQUATION 2	81.048	-7048.5	-9.37	23.6961	.12	30.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS	LOWER		UPPER	
	VOL PER	REF	VOL PER	REF
	1.0	8(DD)		

AUTOIGNITION TEMPERATURE

DEG C	DELAY(SEC)	REF	DEG C	REF
263.	66.	49	332.	40(N,TT)

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                               STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

CIS-2-HEPTENE

SYNONYMS.
FORMULA= C7H14   C/H= 5.958 MW= 98.190 VD= 3.3858

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	1037.85	10570.	11
	(GROSS)	1111.49	11320.	11
HEAT OF VAPORIZATION(25 C)		8.60	87.59	11

----

	20 C	REF	25 C	REF	30 C	REF
DENSITY (GRAM/ML)	.7071	11	.7028	11	.700	20
REFRACTIVE INDEX	1.4069	11	1.4042	11	1.401	20
SURFACE TENSION	20.79	20			19.84	20
VISCOSITY (CS)						

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	-33.9	-2.5	16.5		41.6		98.5	20

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	6.9366	-1292.98	220.30		.01	100.
EQUATION 2	78.182	-7010.9	-8.92	22.7478	.10	30.

FLASH POINT(DEG C)	(CC)	REF	(OC)	REF
	-2.	10(J,UU)		
	-18.	10(J,VV)		

FLAMMABLE LIMITS	LOWER		UPPER	
	VOL PER	REF	VOL PER	REF
,	1.0	8(DD)		

AUTOIGNITION TEMPERATURE
    DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                          STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

TRANS-2-HEPTENE

SYNONYMS.
FORMULA= C7H14   C/H= 5.958 MW= 98.190 VD= 3.3858

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	1036.85	10560.	11
	(GROSS)	1110.49	11310.	11
HEAT OF VAPORIZATION(25 C)		8.60	87.59	11

----

	20 C	REF	25 C	REF	30 C	REF
DENSITY (GRAM/ML)	.7012	11	.6969	11	.6926	20
REFRACTIVE INDEX	1.4045	11	1.4020	11	1.3992	20
SURFACE TENSION	20.00	20			19.03	20
VISCOSITY (CS)						

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	-34.3	-3.0	16.1		41.1		97.9	20

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	6.9327	-1289.68	220.34		-.03	10.
EQUATION 2	78.577	-7013.8	-8.99	23.3049	.13	30.

FLASH POINT(DEG C)	(CC)	REF	(OC)	REF
	-2.	10(J,UU)		

FLAMMABLE LIMITS	LOWER		UPPER	
	VOL PER	REF	VOL PER	REF
	1.0	8(DD)		

AUTOIGNITION TEMPERATURE
     DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                        STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

198

CIS-3-HEPTENE

SYNONYMS.
FORMULA= C7H14   C/H= 5.958 MW= 98.190 VD= 3.3858

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	1037.95	10571.	11
	(GROSS)	1111.59	11321.	11
HEAT OF VAPORIZATION(25 C)		8.50	86.57	11

----

	20 C	REF	25 C	REF	30 C	REF
DENSITY (GRAM/ML)	.7028	11	.6985	11	.6944	20
REFRACTIVE INDEX	1.4059	11	1.4033	11	1.4006	20
SURFACE TENSION	20.21	20			18.26	20
VISCOSITY (CS)						

VAPOR PRESSURE(MM HC)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	-35.8	-4.6	14.3		39.2		95.7	20

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	6.9323	-1282.62	220.83		-.02	100.
EQUATION 2	77.599	-6930.6	-8.85	22.0076	.12	30.

FLASH POINT(DEG C)	(CC)	REF	(OC)	REF
	-6.	10(J,WW)		

FLAMMABLE LIMITS	LOWER		UPPER	
	VOL PER	REF	VOL PER	REF
	1.0	8(DD)		

AUTOIGNITION TEMPERATURE
     DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                        STOICH   REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

199

TRANS-3-HEPTENE

SYNONYMS.
FORMULA= C7H14   C/H= 5.958 MW= 98.190 VD= 3.3858

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF LIQUID   (NET)   1036.95   10561.   11
                     (GROSS) 1110.59   11311.   11
HEAT OF VAPORIZATION(25 C)   8.50   86.57   11
----
                  20 C   REF   25 C   REF   30 C   REF
DENSITY (GRAM/ML) .6981   20   .6938   11   .6895   20
REFRACTIVE INDEX 1.4044   11   1.4017   11   1.3989   20
SURFACE TENSION   19.65   20   18.68   20
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   -35.9   -4.7   14.0   39.1   95.7   20

 VAPOR PRESSURE EQUATION COEFFICIENTS
            A   B   C   D   MAX ERR AT P
EQUATION 1 6.9065 -1269.72   219.72   -.54   30.
EQUATION 2 80.793 -7059.1   -9.33   25.0650   -.40   30.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                      -6.   10(J,WW)

FLAMMABLE LIMITS   LOWER   UPPER
               VOL PER   REF   VOL PER   REF
                  1.0   8(DD)

AUTOIGNITION TEMPERATURE
         DEG C   DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                          STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

1-METHYLCYCLOHEXENE

SYNONYMS.
FORMULA= C7H12   C/H= 6.951 MW= 96.174 VD= 3.3163

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF LIQUID   (NET)   985.73   10249.   11
                     (GROSS)   1048.85   10906.   11
HEAT OF VAPORIZATION(25 C)
----

                    20 C   REF   25 C   REF   30 C   REF
DENSITY (GRAM/ML) .81148   11   .80660   11   .8014   19
REFRACTIVE INDEX 1.45046   11   1.44784   11   1.4459   19
SURFACE TENSION   26.01   19   24.89   19
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T -27.6   4.9   24.6   50.7   110.0   19

 VAPOR PRESSURE EQUATION COEFFICIENTS
              A   B   C   D   MAX ERR AT P
EQUATION 1   6.8796   -1314.02   218.60   -.13   30.
EQUATION 2 78.300   -7162.9   -8.93   25.1288   -.01   30.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                                             7.0   10(L)

FLAMMABLE LIMITS   LOWER   UPPER
                VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
         DEG C   DELAY(SEC)   REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                          STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

4-METHYL-1-CYCLOHEXENE

SYNONYMS.
FORMULA= C7H12   C/H= 6.951 MW= 96.174 VD= 3.3163

                               KCAL/MOLE   CAL/GRAM   REF
HEAT OF COMBUSTION (NET)
                   (GROSS)
HEAT OF VAPORIZATION(25 C)
----
                    20 C   REF   25 C   REF   30 C   REF
DENSITY (GRAM/ML) .7991   11   .7947   11   .7902   19
REFRACTIVE INDEX 1.4414   11   1.4389   11   1.4362   19
SURFACE TENSION   24.61   19   23.53   19
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   -32.2   -.4   19.0   44.5   102.7   19

VAPOR PRESSURE EQUATION COEFFICIENTS
                 A   B   C   D   MAX ERR AT P
EQUATION 1   6.8705   -1283.59   219.03   .19   30.
EQUATION 2   79.103   -7072.0   -9.07   24.6823   .30   30.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                                           -1.   (1,(8)(9))(L)

FLAMMABLE LIMITS   LOWER   UPPER
                 VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
        DEG C   DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                              STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

4,4-DIMETHYL-1-PENTENE

SYNONYMS.
FORMULA= C7H14   C/H= 5.958   MW= 98.190   VD= 3.3858

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	1037.00	10561.	11
	(GROSS)	1110.64	11311.	11
HEAT OF VAPORIZATION(25 C)		7.45	75.87	11

	20 C	REF	25 C	REF	30 C	REF
DENSITY (GRAM/ML)	.68249	11	.67804	11	.6743	20
REFRACTIVE INDEX	1.39172	11	1.38895	11	1.3867	20
SURFACE TENSION	17.93	20			17.03	20
VISCOSITY (CS)						

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	-55.9	-26.1	-7.9		16.4		72.5	20

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	6.6741	-1128.59	225.03		.02	100.
EQUATION 2	74.583	-6132.9	-8.61	22.8683	.11	30.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS	LOWER		UPPER	
	VOL PER	REF	VOL PER	REF
	1.0	8(DD)		

AUTOIGNITION TEMPERATURE
      DEG C   DELAY(SEC)   REF   DEG C   REF

.

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                    STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

2,3-DIMETHYL-2-PENTENE

SYNONYMS.
FORMULA= C7H14   C/H= 5.958 MW= 98.190 VD= 3.3858

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	1035.10	10542.	11
	(GROSS)	1108.74	11292.	11
HEAT OF VAPORIZATION(25 C)		8.50	86.57	11

---

	20 C	REF	25 C	REF	30 C	REF
DENSITY (GRAM/ML)	.7277	11	.7234	11	.7190	20
REFRACTIVE INDEX	1.4211	11	1.4185	11	1.4156	20
SURFACE TENSION	23.20	20			22.10	20
VISCOSITY (CS)						

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	-38.4	-6.6	12.7		38.5		97.5	20

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	6.7544	-1233.63	221.01		-.01	30.
EQUATION 2	76.187	-6711.9	-8.72	24.8373	.11	30.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS	LOWER		UPPER	
	VOL PER	REF	VOL PER	REF
	1.0	8(DD)		

AUTOIGNITION TEMPERATURE
    DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                         STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

2,3,3-TRIMETHYL-1-BUTENE

SYNONYMS.
FORMULA= C7H14   C/H= 5.958   MW= 98.190   VD= 3.3858

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	1036.30	10554.	11
	(GROSS)	1109.94	11304.	11
HEAT OF VAPORIZATION(25 C)		7.68	78.22	11

	20 C	REF	25 C	REF	30 C	REF
DENSITY (GRAM/ML)	.70466	11	.70024	11	.6960	20
REFRACTIVE INDEX	1.40282	11	1.40007	11	1.3973	20
SURFACE TENSION	20.40	20			19.35	20
VISCOSITY (CS)						

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	-52.0	-21.8	-3.3		21.3		77.9	20

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	6.6956	-1151.31	223.93		-.01	30.
EQUATION 2	75.209	-6276.7	-8.67	23.1425	.11	30.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS	LOWER		UPPER	
	VOL PER	REF	VOL PER	REF
	1.0	8(DD)		

AUTOIGNITION TEMPERATURE

DEG C	DELAY(SEC)	REF	DEG C	REF
383.	12.	49		

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                         STOICH   REF   ABS MIN   REF

MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

2-CYCLOPROPYL-1-BUTENE

SYNONYMS.
FORMULA= C7H12   C/H= 6.951 MW= 96.174 VD= 3.3163

                              KCAL/MOLE   CAL/GRAM   REF
HEAT OF COMBUSTION (NET)
                    (GROSS)
HEAT OF VAPORIZATION(25 C)

DENSITY (GRAM/ML)
REFRACTIVE INDEX
SURFACE TENSION
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T

 VAPOR PRESSURE EQUATION COEFFICIENTS
                    A   B   C   D   MAX ERR AT P
EQUATION 1
EQUATION 2

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
                 VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
       DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL
     42.5 (62)   2342 (62)   2.37 (73)
                          STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

206

1-OCTENE

SYNONYMS. 1-OCTYLENE, 1-CAPRYLENE
FORMULA= C8H16   C/H= 5.958 MW= 112.217 VD= 3.8695

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	1185.27	10562.	11
	(GROSS)	1269.43	11312.	11
HEAT OF VAPORIZATION(25 C)		9.70	86.44	11
----

	20 C	REF	25 C	REF	37.78 C	REF
DENSITY (GRAM/ML)	.71492	11	.71085	11		
REFRACTIVE INDEX	1.40870	11	1.40620	11		
SURFACE TENSION	21.76	(8)(60)	21.28	11		
VISCOSITY (CS)	.656	(8)(60)			.557	11

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	-17.5	15.4	35.3		61.6		121.3	20

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	6.9264	-1349.95	212.40		-.03	10.
EQUATION 2	86.618	-7887.2	-10.06	28.8997	.13	30.

FLASH POINT(DEG C)	(CC)	REF	(OC)	REF
			21.	(1,3)(L)

FLAMMABLE LIMITS   LOWER   UPPER

	VOL PER	REF	VOL PER	REF
	.78 AT 80 C	14(U)	6.8 AT 80 C	14(U)
	0.9	8(DD)		

AUTOIGNITION TEMPERATURE

DEG C	DELAY(SEC)	REF	DEG C	REF
256.	72.	49		

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                         STOICH REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

2-OCTENE (CIS AND TRANS)

SYNONYMS.
FORMULA= C8H16   C/H= 5.958 MW= 112.217 VD= 3.8695

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF LIQUID   (NET)   1186.00   10569.   11
                     (GROSS)   1270.16   11319.   11
HEAT OF VAPORIZATION(25 C)
----
                     20 C   REF   25 C   REF   30 C   REF
DENSITY (GRAM/ML) .7221   11(XX)   .7179   11(XX)
REFRACTIVE INDEX 1.4141   11(XX)   1.4116   11(XX)
SURFACE TENSION   21.6   20(XX)   20.6   20(XX)
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   125.3   20

 VAPOR PRESSURE EQUATION COEFFICIENTS
               A   B   C   D   MAX ERR AT P
EQUATION 1
EQUATION 2

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                                            21.   (1,3)(L)

FLAMMABLE LIMITS   LOWER   UPPER
               VOL PER   REF   VOL PER   REF
                0.9   8(DD)

AUTOIGNITION TEMPERATURE
        DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                            STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

2-METHYLHEPTENE

SYNONYMS.
FORMULA= C8H16   C/H= 5.958 MW= 112.217 VD= 3.8695

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF LiQUID   (NET)   1183.50   10547.   11
                      (GROSS)   1267.66   11297.   11
HEAT OF VAPORIZATION(25 C)
----

                      20 C   REF   25 C   REF   30 C   REF
DENSITY (GRAM/ML) .7205   11   .7164   11   .7123   20
REFRACTIVE INDEX 1.4123   11   1.4098   11   1.4073   20
SURFACE TENSION   21.45   20   20.48   20
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T -22.5   11.4   31.7   58.4   119.3   20

 VAPOR PRESSURE EQUATION COEFFICIENTS
             A   B   C   D   MAX ERR AT P
EQUATION 1 7.0004 -1417.95   224.98   -.60 100.
EQUATION 2 57.641 -6400.5   -5.81   3.5592   -.03   30.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
               VOL PER   REF   VOL PER   REF
                 0.9   8(DD)

AUTOIGNITION TEMPERATURE
       DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                            STOICH REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

209

2,3-DIMETHYL-2-HEXENE

SYNONYMS.
FORMULA= C8H16   C/H= 5.958 MW= 112.217 VD= 3.8695

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF LIQUID   (NET)   1180.90   10523.   11
                     (GROSS)   1265.06   11273.   11
HEAT OF VAPORIZATION(25 C)
----

                     20 C   REF   25 C   REF   30 C   REF
DENSITY (GRAM/ML) .7408   11   .7366   11   .7324   20
REFRACTIVE INDEX   1.4268   11   1.4244   11   1.4217   20
SURFACE TENSION   23.97   20   22.90   20
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   -18.8   15.1   35.3   61.8   121.8   20

 VAPOR PRESSURE EQUATION COEFFICIENTS
                 A   B   C   D   MAX ERR AT P
EQUATION 1   7.1057   -1463.94   224.81   -.60 100.
EQUATION 2   58.047   -6560.3   -5.82   3.0134   .01   10.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
                 VOL PER   REF   VOL PER   REF
                   0.9   8(DD)

AUTOIGNITION TEMPERATURE
       DEG C   DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                            STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

2,3,3-TRIMETHYL-1-PENTENE

SYNONYMS.
FORMULA= C8H16   C/H= 5.958 MW= 112.217 VD= 3.8695

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	1182.00	10533.	11
	(GROSS)	1266.16	11283.	11

HEAT OF VAPORIZATION(25 C)

---

	20 C	REF	25 C	REF	30 C	REF
DENSITY (GRAM/ML)	.7352	11	.7308	11	.7263	20
REFRACTIVE INDEX	1.4174	11	1.4151	11	1.4128	20
SURFACE TENSION	23.25	20			22.14	20

VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	-27.2	5.0	24.4		50.1		108.3	20

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	6.9460	-1328.22	218.42		-.02	100.
EQUATION 2	79.039	-7244.2	-9.01	23.7401	.12	30.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
                 VOL PER   REF   VOL PER   REF
                   0.9   8(DD)

AUTOIGNITION TEMPERATURE
        DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                            STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

2,3,4-TRIMETHYL-1-PENTENE

SYNONYMS.
FORMULA= C8H16   C/H= 5.958   MW= 112.217   VD= 3.8695

                              KCAL/MOLE   CAL/GRAM   REF
HEAT OF COMBUSTION (NET)
                   (GROSS)
HEAT OF VAPORIZATION(25 C)
----
                   20 C   REF   25 C   REF   30 C   REF
DENSITY (GRAM/ML) .729   11   .725   11   .721   20
REFRACTIVE INDEX 1.415   11   1.413   11   1.411   20
SURFACE TENSION   22.47   20   21.50   20
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   -27.5   4.7   24.1   49.8   108.0   20

 VAPOR PRESSURE EQUATION COEFFICIENTS
                A   B   C   D   MAX ERR AT P
EQUATION 1   6.9422   -1325.90   218.46   -.02   10.
EQUATION 2   79.295   -7245.2   -9.05   24.1849   .11   30.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
                    VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
      DEG C   DELAY(SEC)   REF   DEG C   REF
      257.   12.   49

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                              STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

212

2,4,4-TRIMETHYL-1-PENTENE

SYNONYMS. ALPHA-DIISOBUTYLENE
FORMULA= C8H16   C/H= 5.958 MW= 112.217 VD= 3.8695

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	1180.00	10515.	11
	(GROSS)	1264.16	11265.	11

HEAT OF VAPORIZATION(25 C)

---

	20 C	REF	25 C	REF	30 C	REF
DENSITY (GRAM/ML)	.7150	11	.7108	11	.7065	20
REFRACTIVE INDEX	1.4086	11	1.4060	11	1.4034	20
SURFACE TENSION	20.79	20			19.81	20
VISCOSITY (CS)						

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	-31.9	-.3	18.9		44.1		101.4	20

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	6.9365	-1302.40	219.69		-.01	30.
EQUATION 2	78.443	-7079.0	-8.95	23.0101	.10	30.

FLASH POINT(DEG C)	(CC)	REF	(OC)	REF
	1.5	10(DD)		

FLAMMABLE LIMITS	LOWER		UPPER	
	VOL PER	REF	VOL PER	REF
	0.9	8(DD)		

AUTOIGNITION TEMPERATURE

DEG C	DELAY(SEC)	REF	DEG C	REF
420.	12.	49		

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

	STOICH	REF	ABS MIN	REF
MIN IGN ENERGY(MILLIJOULE)=	1.75	(7)(57)		
QUENCHING DISTANCE(CM)=	.46	7		

2,4,4-TRIMETHYL-2-PENTENE

SYNONYMS. BETA-DIISOBUTYLENE
FORMULA= C8H16   C/H= 5.958   MW= 112.217   VD= 3.8695

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF LIQUID   (NET)   1178.60   10503.   11
                             (GROSS)   1262.76   11253.   11
HEAT OF VAPORIZATION(25 C)
----

                       20 C   REF   25 C   REF   30 C   REF
DENSITY (GRAM/ML) .7218   11   .7176   11   .7133   20
REFRACTIVE INDEX 1.4160   11   1.4135   11   1.4110   20
SURFACE TENSION   21.60   20   20.59   20
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   -29.6   2.3   21.7   47.1   104.9   20

 VAPOR PRESSURE EQUATION COEFFICIENTS
                  A   B   C   D   MAX ERR AT P
EQUATION 1   6.9406   -1315.39   219.09   -.02   10.
EQUATION 2   78.934   -7168.2   -9.01   23.7816   .12   30.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                     -6.5   4   1.5   (1,3,4)(L)

FLAMMABLE LIMITS   LOWER   UPPER
                VOL PER   REF   VOL PER   REF
                   0.9   8(DD)

AUTOIGNITION TEMPERATURE
     DEG C   DELAY(SEC)   REF   DEG C   REF
     308.   3.   49

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                              STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

3,4,4-TRIMETHYL-2-PENTENE (CIS AND TRANS)

SYNONYMS.
FORMULA= C8H16   C/H= 5.958 MW= 112.217 VD= 3.8695

                              KCAL/MOLE   CAL/GRAM   REF
HEAT OF COMBUSTION (NET)
                  (GROSS)
HEAT OF VAPORIZATION(25 C)
----
                    20 C   REF   25 C   REF   30 C   REF
DENSITY (GRAM/ML)   .739   11   .735   11   .731   20
REFRACTIVE INDEX   1.423   11   1.421   11   1.418   20
SURFACE TENSION   23.74   20   22.71   20
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   -25.5   7.6   27.4   53.3   112.0   20

 VAPOR PRESSURE EQUATION COEFFICIENTS
              A   B   C   D   MAX ERR AT P
EQUATION 1   7.1025   -1429.76   226.75   -.62   100.
EQUATION 2   56.362   -6313.2   -5.60   1.7558   -.03   30.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
                 VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
     DEG C DELAY(SEC) REF   DEG C   REF
     330.   24.   49

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                          STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

215

DIISOBUTYLENE

SYNONYMS.
FORMULA= C8H16   C/H= 5.958   MW= 112.217   VD= 3.8695

                              KCAL/MOLE   CAL/GRAM   REF
HEAT OF COMBUSTION (NET)
                   (GROSS)
HEAT OF VAPORIZATION(25 C)
----
                   25 C   REF
DENSITY (GRAM/ML)
REFRACTIVE INDEX   1.4073   51
SURFACE TENSION
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   101.5   51(AQ)

 VAPOR PRESSURE EQUATION COEFFICIENTS
                   A   B   C   D   MAX ERR AT P
EQUATION 1
EQUATION 2

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                      -6.5   1

FLAMMABLE LIMITS   LOWER   UPPER
                VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
    DEG C   DELAY(SEC)   REF   DEG C   REF
    470.   51(MM)

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                         STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)= 1.75   (7)(57)(QQ)
QUENCHING DISTANCE(CM)=   .457   7(QQ)

2,6-DIMETHYL-3-HEPTENE (CIS AND TRANS)

SYNONYMS.
FORMULA= C9H18   C/H= 5.958 MW= 126.244 VD= 4.3532

                         KCAL/MOLE   CAL/GRAM   REF
HEAT OF COMBUSTION (NET)
                   (GROSS)
HEAT OF VAPORIZATION(25 C)

                  15.5 C REF
DENSITY (GRAM/ML) .722   1
REFRACTIVE INDEX
SURFACE TENSION
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   129.0   1

  VAPOR PRESSURE EQUATION COEFFICIENTS
                  A   B   C   D   MAX ERR AT P
EQUATION 1
EQUATION 2

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                                           21.   1(L)

FLAMMABLE LIMITS   LOWER   UPPER
              VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
       DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                         STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

217

1-DECENE

SYNONYMS. N-DECYLENE
FORMULA= C10H20   C/H= 5.958 MW= 140.271 VD= 4.8369

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF LIQUID   (NET)   1476.76   10528.   11
                      (GROSS)   1581.96   11278.   11
HEAT OF VAPORIZATION(25 C)   12.06   85.98   11
----
                      20 C   REF   25 C   REF   37.78 C   REF
DENSITY (GRAM/ML) .74081   11   .73693   11
REFRACTIVE INDEX 1.42146   11   1.41913   11
SURFACE TENSION   23.54   11
VISCOSITY (CS)   .877   11

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   14.7   53.7   83.3   106.5   149.2   170.6   21

  VAPOR PRESSURE EQUATION COEFFICIENTS
             A   B   C   D   MAX ERR AT P
EQUATION 1   7.6792   -2003.09   246.17   2.51   400.
EQUATION 2   60.171   -7434.3   -6.07   47.7381   1.24   400.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
                 VOL PER   REF   VOL PER   REF
                 .55 AT 80 C   14(U)   5.7 AT 80 C   14(U)

AUTOIGNITION TEMPERATURE
     DEG C   DELAY(SEC)   REF   DEG C   REF
     244.   78.   49

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL
     41.2   (62)(P)   2298   (62)   1.55   (73)
                          STOICH REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

DIAMYLENE

SYNONYMS.
FORMULA= 10H18   C/H= 6.620 MW= 138.255 VD= 4.7674

                              KCAL/MOLE   CAL/GRAM   REF
HEAT OF COMBUSTION (NET)
               (GROSS)
HEAT OF VAPORIZATION(25 C)

DENSITY (GRAM/ML)
REFRACTIVE INDEX
SURFACE TENSION
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   150.0   3

 VAPOR PRESSURE EQUATION COEFFICIENTS
              A   B   C   D   MAX ERR AT P
EQUATION 1
EQUATION 2

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                                           48.   1,3,4

FLAMMABLE LIMITS   LOWER   UPPER
                VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
      DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                           STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

219

TRIISOBUTYLENE

SYNONYMS.
FORMULA= C12H24   C/H= 5.958 MW= 168.325 VD= 5.8043

                              KCAL/MOLE   CAL/GRAM   REF
HEAT OF COMBUSTION (NET)
                   (GROSS)
HEAT OF VAPORIZATION(25 C)
----
                   20 C   REF   25 C   REF
DENSITY (GRAM/ML) .7590   2
REFRACTIVE INDEX   1.4314   2   1.4282   51
SURFACE TENSION
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   18.0   56.5   86.7   110.0   153.0   179.0   21

   VAPOR PRESSURE EQUATION COEFFICIENTS
                A   B   C   D   MAX ERR AT P
EQUATION 1   7.0981   -1665.67   216.64   -2.31   400.
EQUATION 2   48.378   -7028.1   -4.27   -20.8550   -1.41   400.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
                VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
     DEG C   DELAY(SEC)   REF   DEG C   REF
     413.   51

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                            STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

1,1-DINEOPENTYLETHYLENE

SYNONYMS.
FORMULA= C12H24   C/H= 5.958 MW= 168.325 VD= 5.8043

                           KCAL/MOLE   CAL/GRAM   REF
HEAT OF COMBUSTION (NET)
                  (GROSS)
HEAT OF VAPORIZATION(25 C)
----
                 25 C   REF
DENSITY (GRAM/ML)
REFRACTIVE INDEX 1.4271   51
SURFACE TENSION
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   177.5   51(AQ)

 VAPOR PRESSURE EQUATION COEFFICIENTS
                 A   B   C   D   MAX ERR AT P
EQUATION 1
EQUATION 2

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
              VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
     DEG C   DELAY(SEC)   REF   DEG C   REF
     455.   51

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                          STOICH REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

221

1-TETRADECENE

SYNONYMS. 1-TETRADECYLENE
FORMULA= C14H28   C/H= 5.958   MW= 196.379   VD= 6.7717

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	2058.40	10482.	11
	(GROSS)	2205.68	11232.	11
HEAT OF VAPORIZATION(25 C)				
---
	20 C	REF	25 C	REF	37.78 C	REF
DENSITY (GRAM/ML)	.7713	20	.7641	20		
REFRACTIVE INDEX	1.43631	11	1.4320	20		
SURFACE TENSION	24.99	20	24.07	20		
VISCOSITY (CS)					1.92	11

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30		100	400	760	REF
T	74.5	119.0	144.4		177.1		251.1	20

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	7.6580	-2236.23	217.39		-2.42	100.
EQUATION 2	14.698	-6778.2	.82	-98.2463	-.36	30.

FLASH POINT(DEG C)	(CC)	REF	(OC)	REF
	110.	6		

FLAMMABLE LIMITS	LOWER			UPPER		
	VOL PER	REF		VOL PER	REF	

AUTOIGNITION TEMPERATURE

DEG C	DELAY(SEC)	REF	DEG C	REF
239.	66.	49	255.	50

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                        STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

1-HEXADECENE

SYNONYMS.
FORMULA= C16H32   C/H= 5.958 MW= 224.433 VD= 7.7391

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	2349.80	10470.	11
	(GROSS)	2518.12	11220.	11
HEAT OF VAPORIZATION(25 C)				

---

	20 C	REF	25 C	REF	37.78 C	REF
DENSITY (GRAM/ML)	.78112	20	.77406	20		
REFRACTIVE INDEX	1.44120	11	1.43694	11		
SURFACE TENSION	25.75	20	24.83	20		
VISCOSITY (CS)					3.04	11

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	101.6	146.2		178.8	205.3	250.0	274.0	21

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	8.3246	-2715.53	224.62		-1.99	40.
EQUATION 2	71.316	-10955.9	-7.10	44.3810	-1.84	40.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS	LOWER		UPPER	
	VOL PER	REF	VOL PER	REF

AUTOIGNITION TEMPERATURE

DEG C	DELAY(SEC)	REF	DEG C	REF
240.	78.	49	253.	50

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                         STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

223

TETRAISOBUTYLENE

SYNONYMS.
FORMULA= C16H32   C/H= 5.958 MW= 224.433 VD= 7.7391

                              KCAL/MOLE   CAL/GRAM   REF
HEAT OF COMBUSTION (NET)
                   (GROSS)
HEAT OF VAPORIZATION(25 C)
----
                   20 C   REF   25 C   REF   37.78 C   REF
DENSITY (GRAM/ML) .7944   2
REFRACTIVE INDEX 1.4482   2   1.4475   51
SURFACE TENSION   30 SSU   51(AR)
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   63.8   108.5   142.2   167.5   214.6   240.0   21

   VAPOR PRESSURE EQUATION COEFFICIENTS
                  A   B   C   D   MAX ERR AT P
EQUATION 1   7.9435   -2457.55   245.54   -1.46   100.
EQUATION 2   28.825   -7102.8   -1.33   -16.1902   -1.01   100.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
                VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
     DEG C   DELAY(SEC)   REF   DEG C   REF
     415.   51

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                            STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

224

1-OCTADECENE

SYNONYMS.
FORMULA= C18H36   C/H= 5.958 MW= 252.488 VD= 8.7065

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF LIQUID   (NET)   2640.98   10450.   11
                      (GROSS)   2830.34   11210.   11
HEAT OF VAPORIZATION(25 C)
----
                    20 C   REF   30 C   REF   37.78 C   REF
DENSITY (GRAM/ML) .7891   11   .7818   20
REFRACTIVE INDEX 1.4449   11   1.4408   20
SURFACE TENSION   26.36   20   25.43   20
VISCOSITY (CS)   4.19   11

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   128.0 172.0   198.9   234.2   314.2   20

  VAPOR PRESSURE EQUATION COEFFICIENTS
            A   B   C   D   MAX ERR AT P
EQUATION 1   6.9188   -1806.37   133.10   -.41   10.
EQUATION 2 169.083 -18051.7   -20.70   118.4692   .47   30.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
              VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
     DEG C   DELAY(SEC)   REF   DEG C   REF
     251.   (22)(50)

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                         STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

11-TRICOSENE

SYNONYMS.
FORMULA= C23H46   C/H= 5.958 MW= 322.623 VD= 11.1249

                              KCAL/MOLE   CAL/GRAM   REF
HEAT OF COMBJSTION (NET)
                    (GROSS)
HEAT OF VAPORIZATION(25 C)

DENSITY (GRAM/ML)
REFRACTIVE INDEX
SURFACE TENSION
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T

 VAPOR PRESSURE EQUATION COEFFICIENTS
              A   B   C   D   MAX ERR AT P
EQUATION 1
EQUATION 2

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                     140.   1

FLAMMABLE LIMITS   LOWER   UPPER
                 VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
        DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                              STOICH REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

226

PROPADIENE

SYNONYMS.
FORMULA= C3H4   C/H= 8.937 MW= 40.065 VD= 1.3816

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF GAS   (NET)   443.67   11074.   11
                        (GROSS)   464.71   11599.   11
HEAT OF VAPORIZATION(25 C)   3.67   91.60   11

                     -34.5 C   REF
DENSITY (GRAM/ML) .6575   11
REFRACTIVE INDEX
SURFACE TENSION
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   -34.5   11

 VAPOR PRESSURE EQUATION COEFFICIENTS
                 A   B   C   D   MAX ERR AT P
EQUATION 1
EQUATION 2

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
                 VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
        DEG C   DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL
      73.8   (62)   2463 (62)   6.04   (73)
                             STOICH REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

227

1,2-BUTADIENE

SYNONYMS. METHYLALLENE
FORMULA= C4H6   C/H= 7.944 MW= 54.092 VD= 1.8653

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	583.90	10794.	11
	(GROSS)	615.46	11378.	11
HEAT OF VAPORIZATION(25 C)		4.47	82.64	11

---

	20 C	REF	25 C	REF	30 C	REF
DENSITY (GRAM/ML)	.652	11(D)	.646	11(D)	.640	20
REFRACTIVE INDEX						
SURFACE TENSION	16.56	20			15.24	20
VISCOSITY (CS)						

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	-89.0	-64.2		-44.3	-28.3	1.8	18.5	21

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	6.6414	-934.32	229.71		-.85	10.
EQUATION 2	88.303	-5711.1	-10.98	28.4947	-.33	10.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER

	VOL PER	REF	VOL PER	REF
	2.0	8(DD)	12.	8(DD)
	2.0	12(A,YY)	11.5	12(A,YY)

AUTOIGNITION TEMPERATURE
     DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL (CM/SEC)	FLAME TEMP(DEG K)	VOL PERCENT FUEL
58.0 (63)	2419 (7)	4.27 (72)
	STOICH REF	ABS MIN REF

MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

228

1,3-BUTADIENE

SYNONYMS. VINYLETHYLENE, DIVINYL, ERYTHRENE
FORMULA= C4H6   C/H= 7.944 MW= 54.092 VD= 1.8653

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	570.82	10553.	11
	(GROSS)	602.38	11136.	11
HEAT OF VAPORIZATION(25 C)		5.11	94.47	11

----

	20 C	REF	25 C	REF	30 C	REF
DENSITY (GRAM/ML)	.6211	11(D)	.6149	11(D)	.6086	20
REFRACTIVE INDEX						
SURFACE TENSION	13.41	20			12.20	20
VISCOSITY (CS)						

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	-102.8	-79.7		-61.3		-19.3	-4.5	21

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	6.8507	-930.91	238.71		1.36	400.
EQUATION 2	78.215	-5000.3	-9.51	21.4737	.59	40.

FLASH POINT(DEG C)	(CC)	REF	(OC)	REF
	-76.	4		

FLAMMABLE LIMITS   LOWER   UPPER

	VOL PER	REF	VOL PER	REF
	2.0	1,3	11.5	1,3
	2.0	12(A,YY)	11.5	12(A,YY)
	2.0	79	11.5	79

AUTOIGNITION TEMPERATURE

DEG C	DELAY(SEC)	REF	DEG C	REF
450.	1		429.	3
335.	54(3)		418.	54

MAX FLAME VEL(CM/SEC)	FLAME TEMP(DEG K)	VOL PERCENT FUEL
54.5 (63)	2375 (7)	4.34 (72)

		STOICH	REF	ABS MIN	REF
MIN IGN ENERGY(MILLIJOULE)=		.235	(7)(57)(E)	.125	(7)(57)
QUENCHING DISTANCE(CM)=		.18	7	.13	7

229

1,2-PENTADIENE

SYNONYMS. ETHYLALLENE
FORMULA= C5H8   C/H= 7.448   MW=   68.120   VD= 2.3489

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF LIQUID   (NET)   730.10   10718.   11
                      (GROSS)   772.18   11336.   11
HEAT OF VAPORIZATION(25 C)   6.15   90.28   11
----
                    20 C   REF   25 C   REF   30 C   REF
DENSITY (GRAM/ML) .69257   11   .68760   11   .68259   20
REFRACTIVE INDEX 1.42091   11   1.41773   11   1.41446   20
SURFACE TENSION   19.57   20   18.41   20
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   -70.0   -42.6   -26.0   -4.3   44.9   20

  VAPOR PRESSURE EQUATION COEFFICIENTS
              A   B   C   D   MAX ERR AT P
EQUATION 1   7.0105   -1154.20   234.63   .02   100.
EQUATION 2   63.133   -5414.2   -6.67   11.0987   .27   30.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
              VOL PER   REF   VOL PER   REF
                1.5   8(DD)

AUTOIGNITION TEMPERATURE
      DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL
     51.8   (63)   2381 (7)   3.45 (72)
                          STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

CIS-1,3-PENTADIENE

SYNONYMS. CIS-PIPERYLENE
FORMULA= C5H8   C/H= 7.448 MW= 68.120 VD= 2.3489

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF LIQUID   (NET)   714.40   10487.   11
                           (GROSS)   756.48   11105.   11
HEAT OF VAPORIZATION(25 C)   5.75   84.41   11
----

                       20 C   REF   25 C   REF   30 C   REF
DENSITY (GRAM/ML)   .69102   11   .68592   11   .68078   20
REFRACTIVE INDEX   1.43634   11   1.43291   11   1.42943   20
SURFACE TENSION   19.39   20   18.21   20
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   -70.2   -43.1   -26.7   -5.0   44.1   20

VAPOR PRESSURE EQUATION COEFFICIENTS
             A   B   C   D   MAX ERR AT P
EQUATION 1   6.9427   -1118.75   231.36   .03   10.
EQUATION 2   70.321   -5679.2   -7.97   14.7293   .09   30.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                                            -29.   10(L,ZZ)

FLAMMABLE LIMITS   LOWER   UPPER
                    VOL PER   REF   VOL PER   REF
                     1.5   8(DD)

AUTOIGNITION TEMPERATURE
      DEG C DELAY(SEC)   REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL
     46.5   (63)   2336   (7)   3.47 (72)
                           STOICH REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

TRANS-1,3-PENTADIENE

SYNONYMS. TRANS-PIPERYLENE
FORMULA= C5H8   C/H= 7.448 MW= 68.120 VD= 2.3489

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF LIQUID   (NET)   714.50   10489.   11
                    (GROSS)   756.58   11107.   11
HEAT OF VAPORIZATION(25 C)   5.55   81.47   11
----
                    20 C   REF   25 C   REF   30 C   REF
DENSITY (GRAM/ML) .67603   11   .67102   11   .66597   20
REFRACTIVE INDEX 1.43008   11   1.42669   11   1.42302   20
SURFACE TENSION   17.75   20   16.66   20
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T -72.2   -45.1   -28.7   -7.1   42.0   20

 VAPOR PRESSURE EQUATION COEFFICIENTS
            A   B   C   D   MAX ERR AT P
EQUATION 1 6.9227 -1109.02   232.35   -.03   30.
EQUATION 2 69.389 -5577.1   -7.85   15.0206   .08   30.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                                           -29.   10(L,ZZ)

FLAMMABLE LIMITS   LOWER   UPPER
                VOL PER   REF   VOL PER   REF
                   1.5   8(DD)

AUTOIGNITION TEMPERATURE
        DEG C   DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL
     45.6   (63)   2350 (7)   3.37 (72)
                          STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

1,4-PENTADIENE

SYNONYMS.
FORMULA= C5H8   C/H= 7.448 MW= 68.120 VD= 2.3489

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF LIQUID   (NET)   721.20   10587.   11
                      (GROSS)   763.28   11205.   11
HEAT OF VAPORIZATION(25 C)   5.45   80.01   11
---
                 20 C   REF   25 C   REF
DENSITY (GRAM/ML) .66076 11   .65571   11
REFRACTIVE INDEX 1.38876 11   1.38542   11
SURFACE TENSION
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T -83.5   -57.1   -37.0   -20.6   8.3   26.1   21

 VAPOR PRESSURE EQUATION COEFFICIENTS
            A   B   C   D   MAX ERR AT P
EQUATION 1 7.1200   -1142.58   243.94   -2.68   400.
EQUATION 2 33.422   -4040.5   -2.31   -12.8008   1.99   100.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   ·   UPPER
                VOL PER   REF   VOL PER   REF
                  1.5   8(DD)

AUTOIGNITION TEMPERATURE
      DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL
     46.6   (63)   2372 (7)   3.33 (72)
                           STOICH REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

2,3-PENTADIENE

SYNONYMS.
FORMULA= C5H8   C/H= 7.448 MW= 68.120 VD= 2.3489

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF GAS   (NET)   734.55   10783.   11
                    (GROSS)   776.63   11401.   11
HEAT OF VAPORIZATION(25 C)
----

	20 C	REF	25 C	REF	30 C	REF
DENSITY (GRAM/ML)	.69502	11	.69000	11	.68494	20
REFRACTIVE INDEX	1.42842	11	1.42509	11	1.42170	20
SURFACE TENSION	19.87	20			18.69	20
VISCOSITY (CS)						

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T -65.2   -38.4   -22.1   -.6   48.3   20

VAPOR PRESSURE EQUATION COEFFICIENTS
            A   B   C   D   MAX ERR AT P
EQUATION 1   6.8976   -1091.56   223.49   -.13   100.
EQUATION 2   82.521   -6333.4   -9.75   17.1003   .19   30.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
                VOL PER   REF   VOL PER   REF
                  1.5   8(DD)

AUTOIGNITION TEMPERATURE
     DEG C   DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL
     50.7   (63)   2378 (7)   3.43 (72)
                           STOICH REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

CYCLOPENTADIENE

SYNONYMS.
FORMULA= C5H6   C/H= 9.930 MW= 66.104 VD= 2.2794

                          KCAL/MOLE   CAL/GRAM   REF
HEAT OF COMBUSTION (NET)
                   (GROSS)
HEAT OF VAPORIZATION(25 C)
----
                   20 C   REF
DENSITY (GRAM/ML) .8021   2
REFRACTIVE INDEX 1.4429   2
SURFACE TENSION   ♦
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   40.8   2

   VAPOR PRESSURE EQUATION COEFFICIENTS
              A   B   C   D   MAX ERR AT P
EQUATION 1
EQUATION 2

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
               VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
      DEG C DELAY(SEC) REF   DEG C   REF
      510.   (22)(24)(B)

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                        STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)= .67   (7)(57)
QUENCHING DISTANCE(CM)=   .28   7

235

3-METHYL-1,2-BUTADIENE

SYNONYMS.
FORMULA= C5H8   C/H= 7.448 MW= 68.120 VD= 2.3489

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF GAS   (NET)   732.45   10752.   11
                    (GROSS)   774.53   11370.   11
HEAT OF VAPORIZATION(25 C)
----
                    20 C   REF   25 C   REF   30 C   REF
DENSITY (GRAM/ML) .68607 11   .68064 11   .670   20
REFRACTIVE INDEX   1.42026 11   1.41692 11   1.404   20
SURFACE TENSION   18.16   20   17.05   20
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   -72.7   -46.0   -30.0   -8.0   4^.0   20

  VAPOR PRESSURE EQUATION COEFFICIENTS
              A   B   C   D   MAX ERR AT P
EQUATION 1   6.9244 -1097.07   231.16   1.94   100.
EQUATION 2   92.007 -6358.1   -11.37   38.0557   -1.10   30.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
                   VOL PER   REF   VOL PER   REF
                     1.5   8(DD)

AUTOIGNITION TEMPERATURE
        DEG C   DELAY(SEC)   REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                          STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

236

2-METHYL-1,3-BUTADIENE

SYNONYMS. ISOPRENE
FORMULA= C5H8   C/H= 7.448 MW= 68.120 VD= 2.3489

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	713.25	10471.	11
	(GROSS)	755.33	11088.	11
HEAT OF VAPORIZATION(25 C)		6.30	92.48	11

---

	20 C	REF	25 C	REF
DENSITY (GRAM/ML)	.68095	11	.67587	11
REFRACTIVE INDEX	1.42194	11	1.41852	11
SURFACE TENSION	16.9	(8)(61)		
VISCOSITY (CS)	.317	(8)(61)		

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	-79.8	-53.3		-32.6	-16.0	15.4	32.6	21

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	6.8205	-1049.84	233.72		.98	400.
EQUATION 2	69.999	-5353.5	-8.04	16.9774	.54	400.

FLASH POINT(DEG C)	(CC)	REF	(OC)	REF
	-48.5	(8)(9)		
	18.5	1		
	-54.	3,4		

FLAMMABLE LIMITS	LOWER		UPPER	
	VOL PER	REF	VOL PER	REF
	1.5	8(DD)		

AUTOIGNITION TEMPERATURE

DEG C	DELAY(SEC)	REF	DEG C	REF
220.		1	440	3,4,(22)(24)(8)

MAX FLAME VEL(CM/SEC)	FLAME TEMP(DEG K)	VOL PERCENT FUEL
45.0 (63)	2344 (7)	3.41 (72)
	STOICH REF	ABS MIN REF

MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

1,4-HEXADIENE

SYNONYMS. ALLYLPROPENYL
FORMULA= C6H10   C/H= 7.150 MW= 82.147 VD= 2.8326

                        KCAL/MOLE   CAL/GRAM   REF
HEAT OF COMBUSTION (NET)
                  (GROSS)
HEAT OF VAPORIZATION(25 C)
----
                   20 C   REF   25 C   REF   30 C   REF
DENSITY (GRAM/ML) .700   11   .695   11   .690   20
REFRACTIVE INDEX   1.415   11   1.412   11   1.409   20
SURFACE TENSION   19.31   20   18.19   20
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   -54.7 -26.1   -8.9   13.8   65.0   20

  VAPOR PRESSURE EQUATION COEFFICIENTS
             A   B   C   D   MAX ERR AT P
EQUATION 1   7.0184 -1206.44   226.59   .22   10.
EQUATION 2   158.350 -9290.8   -21.50   272.1810   -1.58   30.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                     -21.   6

FLAMMABLE LIMITS   LOWER   UPPER
              VOL PER   REF   VOL PER   REF
               2.0   6   6.1   6

AUTOIGNITION TEMPERATURE
     DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                          STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

238

1,5-HEXADIENE

SYNONYMS. DIALLYL, BIALLYL
FORMULA= C6H10   C/H= 7.150 MW= 82.147 VD= 2.8326

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF LIQUID   (NET)   867.40   10559.   11
                    (GROSS)   920.00   11199.   11
HEAT OF VAPORIZATION(25 C)
----
                20 C   REF   25 C   REF   30 C   REF
DENSITY (GRAM/ML) .6923   11   .6878   11   .6833   20
REFRACTIVE INDEX 1.4042   11   1.4010   11   1.3978   20
SURFACE TENSION 18.46   20   17.47   20
VISCOSITY (CS)   .394   (8)(61)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   -58.6 -30.4   -13.4   8.9   59.5   20

  VAPOR PRESSURE EQUATION COEFFICIENTS
            A   B   C   D   MAX ERR AT P
EQUATION 1 7.0067 -1184.62   227.66   .02   10.
EQUATION 2 74.319 -6186.6   -8.47   16.7240   .08   30.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
                 VOL PER   REF   VOL PER   REF
                   1.2   8(DD)

AUTOIGNITION TEMPERATURE
    DEG C DELAY(SEC) REF   DEG C   REF
    330.   (22)(24)(B,AB)

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL
    44.2 (63)   2.83 (72)
                          STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

239

CYCLOHEXADIENE

SYNONYMS.
FORMULA= C6H8   C/H= 8.937 MW= 80.131 VD= 2.7631

                              KCAL/MOLE   CAL/GRAM   REF
HEAT OF COMBUSTION (NET)
                 (GROSS)
HEAT OF VAPORIZATION(25 C)

DENSITY (GRAM/ML)
REFRACTIVE INDEX
SURFACE TENSION
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T

  VAPOR PRESSURE EQUATION COEFFICIENTS
                A   B   C   D   MAX ERR AT P
EQUATION 1
EQUATION 2

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
              VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
     DEG C DELAY(SEC) REF   DEG C   REF
     360.   (22)(24)(B)

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                         STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

240

2-METHYL-1,3-PENTADIENE

SYNONYMS.
FORMULA= C6H10   C/H= 7.150 MW= 82.147 VD= 2.8326

                              KCAL/MOLE   CAL/GRAM   REF
HEAT OF COMBUSTION (NET)
                  (GROSS)
HEAT OF VAPORIZATION(25 C)
----
                    20 C   REF   25 C   REF   40 C   REF
DENSITY (GRAM/ML) .719   11   .714   11
REFRACTIVE INDEX   1.446   11   1.443   11
SURFACE TENSION   21.52   20   19.16   20
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   76.0   11

  VAPOR PRESSURE EQUATION COEFFICIENTS
                   A   B   C   D   MAX ERR AT P
EQUATION 1
EQUATION 2

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
                VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
      DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL
     39.0 (62)   2345 (62)   2.78 (73)
                            STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

4-METHYL-1,3-PENTADIENE

SYNONYMS.
FORMULA= C6H10   C/H= 7.150 MW= 82.147 VD= 2.8326

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF LIQUID   (NET)   859.40   10462.   11
                     (GROSS)   912.00   11102.   11
HEAT OF VAPORIZATION(25 C)
----
                    20 C   REF   25 C   REF   30 C   REF
DENSITY (GRAM/ML)   .719   11   .714   11   .709   20
REFRACTIVE INDEX   1.451   11   1.448   11   1.445   20
SURFACE TENSION   21.52   20   20.32   20
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   -46.9 -17.5   .3   23.7   76.3   20

    VAPOR PRESSURE EQUATION COEFFICIENTS
              A   B   C   D   MAX ERR AT P
EQUATION 1   7.0348 -1249.80   224.57   .01   30.
EQUATION 2   79.681 -6735.2   -9.21   22.7066   .13   3C.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                      -34.5 1,3,4

FLAMMABLE LIMITS   LOWER   UPPER
                    VOL PER   REF   VOL PER   REF
                      1.2   8(DD)

AUTOIGNITION TEMPERATURE
      DEG C   DELAY(SEC) REF   DEG C   REF
                                            .

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                        STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

242

METHYLCYCLOPENTADIENE

SYNONYMS.
FORMULA= C6H8   C/H=   .894   MW= 152.704   VD= 5.2657

                              KCAL/MOLE   CAL/GRAM   REF
HEAT OF COMBUSTION (NET)
                   (GROSS)
HEAT OF VAPORIZATION(25 C)

DENSITY (GRAM/ML)
REFRACTIVE INDEX
SURFACE TENSION
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   72.8   3

  VAPOR PRESSURE EQUATION COEFFICIENTS
                 A   B   C   D   MAX ERR AT P
EQUATION 1
EQUATION 2

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                      49.   3

FLAMMABLE LIMITS   LOWER   UPPER
                 VOL PER   REF   VOL PER   REF
                 1.3 AT 100 C   3   7.6 AT 100 C   3

AUTOIGNITION TEMPERATURE
       DEG C   DELAY(SEC)   REF   DEG C   REF
       446.   3

MAX FLAME VEL.(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                          STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

2,3-DIMETHYL-1,3-BUTADIENE

SYNONYMS.
FORMULA= C6H10   C/H= 7.150 MW= 82.147 VD= 2.8326

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF LIQUID   (NET)   855.90   10419.   11
                      (GROSS)   908.50   11059.   11
HEAT OF VAPORIZATION(25 C)
----
                  20 C   REF   25 C   REF   30 C   REF
DENSITY (GRAM/ML) .7267   11   .7222   11   .7177   20
REFRACTIVE INDEX 1.4394 11   1.4362 11   1.4330   20
SURFACE TENSION   22.44   20   21.32   20
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T -52.1 -23.2   -5.8   17.1   68.8   20

 VAPOR PRESSURE EQUATION COEFFICIENTS
              A   B   C   D   MAX ERR AT P
EQUATION 1   7.0230 -1220.46   225.86   .02   30.
EQUATION 2   75.504 -6424.2   -8.60   17.6672   .13   30.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
                 VOL PER   REF   VOL PER   RFF
                   1.2   8(DD)

AUTOIGNITION TEMPERATURE
       DEG C   DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL
     41.6   (63)   2317 (7)   2.85   (72)
                          STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

1,5-CYCLOOCTADIENE

SYNONYMS.
FORMULA= C8H12   C/H= 7.944 MW= 108.185 VD= 3.7305

                            KCAL/MOLE   CAL/GRAM   REF
HEAT OF COMBUSTION (NET)
                   (GROSS)
HEAT OF VAPORIZATION(25 C)
----
                    20 C   REF   25 C   REF
DENSITY (GRAM/ML) .8833   8   .880   8
REFRACTIVE INDEX 1.4933   8
SURFACE TENSION
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   150.0   8

 VAPOR PRESSURE EQUATION COEFFICIENTS
                A   B   C   D   MAX ERR AT P
EQUATION 1
EQUATION 2

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                      38.   8

FLAMMABLE LIMITS   LOWER   UPPER
                    VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
        DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                         STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

DICYCLOPENTADIENE

SYNONYMS.
FORMULA= C10H12   C/H= 9.930 MW= 132.207 VD= 4.5589

                        KCAL/MOLE   CAL/GRAM   REF
HEAT OF COMBUSTION (NET)
                  (GROSS)
HEAT OF VAPORIZATION(25 C)
----
                  35 C   REF
DENSITY (GRAM/ML) .9302   2
REFRACTIVE INDEX 1.5050   2
SURFACE TENSION
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   170.0   2

 VAPOR PRESSURE EQUATION COEFFICIENTS
                 A   B   C   D   MAX ERR AT P
EQUATION 1
EQUATION 2

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                                           32.   3

FLAMMABLE LIMITS   LOWER   UPPER
                VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
      DEG C   DELAY(SEC) REF   DEG C   REF
      510.   (22)(24)(B)

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                             STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

246

ETHYNE

SYNONYMS. ACETYLENE, ETHINE
FORMULA= C2H2   C/H= 11.916 MW= 26.038 VD=   .8979

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF GAS   (NET)   300.10   11525.   11
                    (GROSS)   310.62   11929.   11
HEAT OF VAPORIZATION(25 C)
----
                    20 C   REF   -84 C   REF
DENSITY (GRAM/ML) .6154   11
REFRACTIVE INDEX
SURFACE TENSION   19.6   8
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T -153.3 -129.5 -120.1   -108.3   -84.0   20

 VAPOR PRESSURE EQUATION COEFFICIENTS
            A   B   C   D   MAX ERR AT P
EQUATION 1   1.5859   8.11   95.01   2697.49   1.
EQUATION 2 -258.375   4371.0   46.36 -54.7737   -4.04   30.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                     -18.   1

FLAMMABLE LIMITS   LOWER   UPPER
                 VOL PER   REF   VOL PER   REF
                   2.5   1,3,4   81.   3,4
                   2.5   (8)(15)   80.   1,(8)(15)
                   2.5   12(A)

AUTOIGNITION TEMPERATURE
     DEG C DELAY(SEC) REF   DEG C   REF
     335.   1   300   3,4
     305.   5.8   26(AW)
     296.   6.8   26(B,AV)

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL
     141. (73)   10.1   (73)
                        STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)= .03   (7)(57)(E) .051   58
QUENCHING DISTANCE(CM)=   .08   7

247

PROPYNE

SYNONYMS. METHYLACETYLENE
FORMULA= C3H4   C/H= 8.937 MW= 40.065 VD= 1.3816

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF GAS   (NET)   442.07   11034.   11
                       (GROSS)   463.11   11559.   11
HEAT OF VAPORIZATION(25 C)   4.07   101.58   11

                    -23.2 C REF
DENSITY (GRAM/ML) .6711   11
REFRACTIVE INDEX
SURFACE TENSION
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T -110.6   -90.2   -78.2   -61.1   -23.2   20

 VAPOR PRESSURE EQUATION COEFFICIENTS
              A   B   C   D   MAX ERR AT P
EQUATION 1 6.6594   -764.00   225.32   -2.45   30.
EQUATION 2 116.494 -6057.6   -15.56   24.9191   -2.11   30.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
               VOL PER   REF   VOL PER   REF
                1.7   1,3

AUTOIGNITION TEMPERATURE
      DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL
    69.9 (69)   2472 (55)   5.86   (69)
                          STOICH REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=   .115   58
QUENCHING DISTANCE(CM)=

248

1-BUTYNE

SYNONYMS. ETHYLACETYLENE
FORMULA= C4H6   C/H= 7.944 MW= 54.092 VD= 1.8653

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF GAS   (NET)   589.08   10890.   11
                     (GROSS)   620.64   11474.   11
HEAT OF VAPORIZATION(25 C)   4.98   92.06   11
----

                     20 C   REF   40 C   REF
DENSITY (GRAM/ML) .65   11(DD)
REFRACTIVE INDEX
SURFACE TENSION   16.40   20   16.03   20
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   -92.5 -68.7   -50.0 -34.9   -6.9   8.7   21

   VAPOR PRESSURE EQUATION COEFFICIENTS
               A   B   C   D   MAX ERR AT P
EQUATION 1   6.8312   -949.27   231.47   -.48   760.
EQUATION 2   83.024   -5509.3   -10.11   18.9532   .27   100.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
              VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
        DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL
     58.1   (69)   2413 (55)   4.36 (69)
                           STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

249

2-BUTYNE

SYNONYMS. DIMETHYLACETYLENE, CROTONYLENE
FORMULA= C4H6   C/H= 7.944 MW= 54.092 VD= 1.8653

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF GAS   (NET)   584.57   10807.   11
                            (GROSS)   616.13   11390.   11
HEAT OF VAPORIZATION(25 C)   5.47   101.12   11
----

                    20 C   REF   25 C   REF
DENSITY (GRAM/ML) .6910   11   .6856   11
REFRACTIVE INDEX   1.3921   11   1.3893   11
SURFACE TENSION   17.4   (8)(60)
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   -80.0   -54.5   -39.0   -18.7   27.0   20

  VAPOR PRESSURE EQUATION COEFFICIENTS
              A   B   C   D   MAX ERR AT P
EQUATION 1   7.0224   -1080.54   233.88   -.31   10.
EQUATION 2   73.970   -5566.7   -8.58   16.7574   .28   30.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                      18.   1(AC)

FLAMMABLE LIMITS   LOWER   UPPER
                 VOL PER   REF   VOL PER   REF
                   1.4   1(AC)

AUTOIGNITION TEMPERATURE
        DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL
     51.5   (69)   2401   (55)   4.36   (69)
                          STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

1-PENTYNE

SYNONYMS.
FORMULA= C5H8   C/H= 7.448   MW= 68.120 VD= 2.3489

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF GAS   (NET)   735.95   10804.   11
                    (GROSS)   778.03   11422.   11
HEAT OF VAPORIZATION(25 C)   5.45   80.01   11
----
                     20 C   REF   25 C   REF   40 C   REF
DENSITY (GRAM/ML)   .6901   11   .6849   11
REFRACTIVE INDEX   1.3852   11   1.3826   11
SURFACE TENSION   19.34   20   16.94   20
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   -70.0   -44.0   -28.0   -7.0   40.2   20

   VAPOR PRESSURE EQUATION COEFFICIENTS
              A   B   C   D   MAX ERR AT P
EQUATION 1 6.9279   -1073.59   224.99   -.89   10.
EQUATION 2 96.416   -6684.1   -11.95   31.4218   .47   30.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
             VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
      DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL
    52.9   (69)   2370 (55)   3.51   (69)
                          STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

251

2-PENTYNE

SYNONYMS.
FORMULA= C5H8   C/H= 7.448 MW= 68.120 VD= 2.3489

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF GAS	(NET)	732.25	10749.	11
	(GROSS)	774.33	11367.	11
HEAT OF VAPORIZATION(25 C)		6.15	90.28	11

----

	20 C	REF	25 C	REF	40 C	REF
DENSITY (GRAM/ML)	.7107	11	.7055	11		
REFRACTIVE INDEX	1.4039	11	1.4009	11		
SURFACE TENSION	21.84	20			19.27	20
VISCOSITY (CS)						

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	-61.0	-32.8	-16.0		6.2		56.1	20

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	7.1017	-1217.90	232.48		.56	10.
EQUATION 2	61.567	-5639.9	-6.53	7.0632	-.28	30.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
                VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
        DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL
     51.3 (62)   2378 (62)   3.36 (73)
                            STOICH REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

1-HEXYNE

SYNONYMS.
FORMULA= C6H10   C/H= 7.150   MW= 82.147   VD= 2.8326

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	877.20	10678.	11
	(GROSS)	929.80	11319.	11

HEAT OF VAPORIZATION(25 C)
----

	20 C	REF	25 C	REF	40 C	REF
DENSITY (GRAM/ML)	.7155	11	.7106	11		
REFRACTIVE INDEX	1.3989	11	1.3960	11		
SURFACE TENSION	21.16	20			18.85	20
VISCOSITY (CS)						

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	-52.2	-22.9	-5.2		18.2		71.3	20

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	6.9293	-1202.48	225.73		.18	10.
EQUATION 2	72.893	-6278.1	-8.24	16.4378	-.02	30.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS	LOWER		UPPER	
	VOL PER	REF	VOL PER	REF

AUTOIGNITION TEMPERATURE
     DEG C   DELAY(SEC)   REF   DEG C   REF

MAX FLAME VEL(CM/SEC)	FLAME TEMP(DEG K)	VOL PERCENT FUEL
48.5 (69)	2333 (55)	2.97 (69)
	STOICH REF	ABS MIN REF

MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

3-HEXYNE

SYNONYMS.
FORMULA= C6H10   C/H= 7.150 MW= 82.147 VD= 2.8326

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF LIQUID   (NET)   873.00   10627.   11
                          (GROSS)   925.60   11268.   11
HEAT OF VAPORIZATION(25 C)
----
                          20 C   REF   25 C   REF
DENSITY (GRAM/ML) .7227   11   .7182   11
REFRACTIVE INDEX   1.4113   11   1.4088   11
SURFACE TENSION
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   81.4   11

 VAPOR PRESSURE EQUATION COEFFICIENTS
                 A   B   C   D   MAX ERR AT P
EQUATION 1
EQUATION 2

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
                 VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
        DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL
     45.4 (69)   2306 (7)   3.05 (69)
                          STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

4-METHYL-1-PENTYNE

SYNONYMS.
FORMULA= C6H10   C/H= 7.150 MW= 82.147 VD= 2.8326

                          KCAL/MOLE   CAL/GRAM   REF
HEAT OF COMBUSTION (NET)
                   (GROSS)
HEAT OF VAPORIZATION(25 C)
----
                  20 C   REF   25 C   REF
DENSITY (GRAM/ML) .7045   11   .7000   11
REFRACTIVE INDEX 1.3930 11   1.3905 11
SURFACE TENSION
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   61.1   2

  VAPOR PRESSURE EQUATION COEFFICIENTS
              A   B   C   D   MAX ERR AT P
EQUATION 1
EQUATION 2

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
              VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
      DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL
     45.0   (69)   2344   (7)   2.87 (69)
                          STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

255

4-METHYL-2-PENTYNE

SYNONYMS.
FORMULA= C6H10   C/H= 7.150 MW= 82.147 VD= 2.8326

                        KCAL/MOLE   CAL/GRAM   REF
HEAT OF COMBUSTION (NET)
                    (GROSS)
HEAT OF VAPORIZATION(25 C)
----
                    20 C   REF   25 C   REF
DENSITY (GRAM/ML) .7157   11   .7112   11
REFRACTIVE INDEX 1.4057   11   1.4032   11
SURFACE TENSION
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   72.3   11

  VAPOR PRESSURE EQUATION COEFFICIENTS
                A   B   C   D   MAX ERR AT P
EQUATION 1
EQUATION 2

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
               VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
      DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL
    45.6 (62)   2311 (62)
                          STOICH REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

256

3,3-DIMETHYL-1-BUTYNE

SYNONYMS. TERT-BUTYLACETYLENE
FORMULA= C6H10   C/H= 7.150 MW= 82.147 VD= 2.8326

                              KCAL/MOLE   CAL/GRAM   REF
HEAT OF COMBUSTION (NET)
                   (GROSS)
HEAT OF VAPORIZATION(25 C)
----
                    20 C   REF
DENSITY (GRAM/ML) .6695   2
REFRACTIVE INDEX   1.3749   2
SURFACE TENSION
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   39.5   2

 VAPOR PRESSURE EQUATION COEFFICIENTS
              A   B   C   D   MAX ERR AT P
EQUATION 1
EQUATION 2

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
              VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
        DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL
     47.7 (63)   2339 (7)   2.89 (72)
                            STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

257

1-HEPTYNE

SYNONYMS.
FORMULA= C7H12   C/H= 6.951 MW= 96.174 VD= 3.3163

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF LIQUID   (NET)   102.80   10635.   11
                      (GROSS)   1085.92   11291.   11
HEAT OF VAPORIZATION(25 C)
----
                    20 C   REF   25 C   REF   40 C   REF
DENSITY (GRAM/ML)   .7328   11   .7283   11
REFRACTIVE INDEX   1.4087   11   1.4061   11
SURFACE TENSION   22.34   20   20.19   20
VISCOSITY (CS)

VAPOR PRESSURE (MM HG)-TEMPERATURE (DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   -38.0   -6.0   13.6   39.6   99.7   20

 VAPOR PRESSURE EQUATION COEFFICIENTS
            A   B   C   D   MAX ERR AT P
EQUATION 1 6.6887   -1217.30   219.99   -.14   100.
EQUATION 2 75.492   -6673.2   -8.63   23.9489   .18   30.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
                VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
      DEG C   DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                        STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)= .931   (7)(57)(E)
QUENCHING DISTANCE(CM)=   .33   7

258

BENZENE

SYNONYMS. BENZOL, PHENYL HYDRIDE, COAL NAPHTHA
FORMULA= C6H6   C/H= 11.916   MW= 78.115   VD= 2.693ᵤ

```
HEAT OF COMBUSTION                  KCAL/MOLE       CAL/GRAM    REF
OF LIQUID                 (NET)       749.42         9594.      11
                          (GROSS)     780.98         9998.      11
HEAT OF VAPORIZATION(25 C)              8.09         103.57     11
```

	20 C	REF	25 C	REF	37.78 C	REF
DENSITY (GRAM/ML)	.87901	11	.87370	11		
REFRACTIVE INDEX	1.50112	11	1.49792	11		
SURFACE TENSION	28.88	(8)(60)	28.18	11		
VISCOSITY (CS)	.736	(8)(60)			.5870	11

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	-36.7	-11.5		7.6	26.1	60.6	80.1	21

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	5.7715	-679.02	154.30		-5.51	40.
EQUATION 2	277.256	-15375.2	-38.83	119.9670	-4.80	40.

```
FLASH POINT(DEG C)    (CC)   REF              (OC)    REF
                      -11.   1,3,4
                      -11.   70(J)
```

```
FLAMMABLE LIMITS    LOWER                        UPPER
              VOL PER   REF                 VOL PER   REF
              1.46      75(Z)               5.55      75(Z)
              1.41      75(X)               7.45      75(X)
              1.4       1,4,12(A)           8.0       1,4
              1.3       6                   7.1       3,6,12(A)
              1.34      14(U)               9.2       14(U)
        1.4 AT 100 C   3                    6.75      52
        1.3 AT 100 C   (8)(15)    7.9 AT 100 C       (8)(15)
```

```
AUTOIGNITION TEMPERATURE
    DEG C   DELAY(SEC)   REF              DEG C   REF
    538.                 1                563.    3,4
    656.                 40(N)            645.    50
    662.                 (22)(23)(B)      740.    (22)(23)
    690.                 (22)(24)(B)      566.    (22)(34)(B)
    592.        42.      49               580.    38
    724.                 70               652.    46
```

```
MAX FLAME VEL(CM/SEC)    FLAME TEMP(DEG K)       VOL PERCENT FUEL
    44.6   (62)(P)          2362  (62)                2.94  (73)
                          STOICH  REF             ABS MIN  REF
MIN IGN ENERGY(MILLIJOULE)=  .79    56             .225     58
QUENCHING DISTANCE(CM)=      .28    7              .18      7
```

TOLUENE

SYNONYMS. METHYLBENZENE, PHENYLMETHANE, TOLUOL
FORMULA= C7H8   C/H= 10.427   MW= 92.142   VD= 3.1773

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF LIQUID   (NET)   892.42   9685.   11
                      (GROSS)   934.50   10142.   11
HEAT OF VAPORIZATION(25 C)   9.08   98.54   11
----

                    20 C   REF   25 C   REF   37.78 C   REF
DENSITY (GRAM/ML)   .86696   11   .86231   11
REFRACTIVE INDEX   1.49693 11   1.49413 11
SURFACE TENSION   28.53   (8)(60)   27.92   11
VISCOSITY (CS)   .675   (8)(60)   .5584   11

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T -26.7   6.4   31.8   51.9   89.5   110.6   21

  VAPOR PRESSURE EQUATION COEFFICIENTS
              A   B   C   D   MAX ERR AT P
EQUATION 1   7.0926   -1422.11   227.17   .93   10.
EQUATION 2   55.208   -6226.1   -5.44   .4542   .31   400.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                     4.5   1,3,4,6   7.   4
                     7.   10(J)

FLAMMABLE LIMITS   LOWER   UPPER
                 VOL PER   REF   VOL PER   REF
          1.2 AT 100 C   (8)(15)   7.1 AT 100 C   (8)(15)
                 1.2   6   7.1   6
                 1.27   1,75(X)   7.0   1,4
                 1.3   4   6.7   3
                 1.4   3,12(A)   6.75   75(X)
                 1.28   75(Z)   4.60   75(Z)
                 0.91   14(U)   7.4   14(U)

AUTOIGNITION TEMPERATURE
     DEG C   DELAY(SEC)   REF   DEG C   REF
     552.   1   536.   3,4
     552.   (22)(23)(B) 810.   (22)(23)
     640.   (22)(24)(B) 516.   (22)(35)(B)
     552.   38   540.   (22)(30)
     568.   48.   49   635.   50
     633.   40(N)   629.   46

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL
    38.8   (62)(P)   2343   (62)   2.39   (73)
                           STOICH REF   A3S MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

ETHYLBENZENE

SYNONYMS. ETHYLBENZOL, PHENYLETHANE
FORMULA= C8H10   C/H= 9.533 MW= 106.169 VD= 3.6610

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF LIQUID   (NET)   1038.43   9781.   11
                      (GROSS)   1091.03   10276.   11
HEAT OF VAPORIZATION(25 C)   10.10   95.13   11
----
                     20 C   REF   25 C   REF   37.78 C   REF
DENSITY (GRAM/ML) .86702   11   .86264   11
REFRACTIVE INDEX   1.49588   11   1.49320   11
SURFACE TENSION   29.04   (8)(60)   28.48   11
VISCOSITY (CS)   .780   (8)(60)   .6428   11

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   -9.8   25.9   52.8   74.1   113.8   136.2   21

 VAPOR PRESSURE EQUATION COEFFICIENTS
            A   B   C   D   MAX ERR AT P
EQUATION 1   7.2418   -1596.68   230.21   1.73   10.
EQUATION 2   39.371   -5944.9   -3.01   -19.7328   .57   10.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                     15.   3,4   29.5   1
                                            24.   4
                                            22.   10(L)

FLAMMABLE LIMITS   LOWER   UPPER
              VOL PER   REF   VOL PER   REF
        .99 AT 100 C (8)(15)   6.7 AT 100 C (8)(15)
              1.0   3,4,12(A)

AUTOIGNITION TEMPERATURE
    DEG C DELAY(SEC) REF   DEG C   REF
    466.   1   432.   3,4
    460.   18.   49   553.   40(N)
    477.   13.   54(AX)
    468.   14.   54(B,AX)

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                          STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

O-XYLENE

SYNONYMS. O-XYLOL, 1,2-DIMETHYLBENZENE, 2-XYLENE
FORMULA= C8H10   C/H= 9.533   MW= 106.169   VD= 3.6610

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF LIQUID   (NET)   1035.56   9754.   11
                     (GROSS)   1088.16   10249.   11
HEAT OF VAPORIZATION(25 C)   10.38   97.77   11

----

                        20 C   REF   25 C   REF   37.78 C   REF
DENSITY (GRAM/ML)   .88020   11   .87596   11
REFRACTIVE INDEX   1.50545   11   1.50295   11
SURFACE TENSION   30.03   (8)(60) 29.84   11
VISCOSITY (CS)   .917   (8)(60)   .740   11

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   -3.8   32.1   59.5   81.3   121.7   144.4   21

VAPOR PRESSURE EQUATION COEFFICIENTS
              A   B   C   D   MAX ERR AT P
EQUATION 1   7.1536   -1570.50   223.30   1.02   10.
EQUATION 2   55.649   -6834.1   -5.41   -.0015   -.39   40.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                      17.   3,4   46.   (1,10)(L)
                      32.   6   24.   3
                      27.0   19(AY)

FLAMMABLE LIMITS   LOWER   UPPER
                VOL PER   REF   VOL PER   REF
            1.1 AT 100 C (8)(15)   6.4 AT 100 C (8)(15)
                1.0   3,4   6.0   3,4
                1.1   1   7.0   1

AUTOIGNITION TEMPERATURE
    DEG C   DELAY(SEC)   REF   DEG C   REF
    464.   3,4   551.   50
    501.   30.   49   496.   38
    592.   46

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL
    34.4   (62)(P)   2337   (62)   2.12   (73)
                             STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

M-XYLENE

SYNONYMS. M-XYLOL, 1,3-DIMETHYLBENZENE, 3-XYLENE
FORMULA= C8H10   C/H= 9.533 MW= 106.169 VD= 3.6610

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	1035.32	9752.	11
	(GROSS)	1087.92	10247.	11
HEAT OF VAPORIZATION(25 C)		10.20	96.07	11

----

	20 C	REF	25 C	REF	37.78 C	REF
DENSITY (GRAM/ML)	.86417	11	.85990	11		
REFRACTIVE INDEX	1.49722	11	1.49464	11		
SURFACE TENSION	28.63	(8)(60)	28.08	11		
VISCOSITY (CS)	.712	(8)(60)			.591	11

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	-6.9	28.3		55.3	76.8	116.7	139.1	21

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	7.0995	-1516.53	220.48		.84	10.
EQUATION 2	62.117	-7061.7	-6.37	6.0783	-.31	40.

FLASH POINT(DEG C)	(CC)	REF	(OC)	REF
	23.2	19(AY)		
	25.	1,3,4		

FLAMMABLE LIMITS   LOWER   UPPER

	VOL PER	REF	VOL PER	REF
	1.1 AT 100 C	(8)(15)	6.4 AT 100 C	(8)(15)
	0.88	14(U)	6.1	14(U)
	1.1	1,3,4	7.0	1,3,4

AUTOIGNITION TEMPERATURE

DEG C	DELAY(SEC)	REF	DEG C	REF
528.		3,4	652.	50
563.	54.	49	689.	46

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                            STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

263

P-XYLENE

SYNONYMS. P-XYLOL, 1,4-DIMETHYLBENZENE, 4-XYLENE
FORMULA= C8H10   C/H= 9.533 MW= 106.169 VD= 3.6610

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	1035.56	9754.	11
	(GROSS)	1088.16	10249.	11
HEAT OF VAPORIZATION(25 C)		10.13	95.41	11

----

	20 C	REF	25 C	REF	37.78 C	REF
DENSITY (GRAM/ML)	.86105	11	.85669	11		
REFRACTIVE INDEX	1.49582	11	1.49325	11		
SURFACE TENSION	28.31	(8)(60)	27.76	11		
VISCOSITY (CS)	.746	(8)(60)			.613	11

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	-8.1	27.3		54.4	75.9	115.9	138.3	21

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR AT P
EQUATION 1	7.1342	-1540.53	224.00		.92 10.
EQUATION 2	56.675	-6763.1	-5.58	2.2325	.31 10.

FLASH POINT(DEG C)	(CC)	REF	(OC)	REF
	25.	3,4	39.5	1(L)
	27.	(8)(9)(J)		
	23.0	19(AY)		

FLAMMABLE LIMITS   LOWER   UPPER

	VOL PER	REF	VOL PER	REF
	1.1	1,3,4	7.0	1,3,4
	1.1 AT 100 C	(8)(15)	6.6 AT 100 C	(8)(15)

AUTOIGNITION TEMPERATURE

DEG C	DELAY(SEC)	REF	DEG C	REF
529.		3,4	618.	40(N)
564.	42.	49	657.	50
691.		46		

MAX FLAME VEL.(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                         STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

264

N-PROPYLBENZENE

SYNONYMS. 1-PHENYLPROPANE
FORMULA= C9H12   C/H= 8.937   MW= 120.196   VD= 4.1447

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	1184.07	9851.	11
	(GROSS)	1247.19	10376.	11
HEAT OF VAPORIZATION(25 C)		11.05	91.93	11

----

	20 C	REF	25 C	REF	37.78 C	REF
DENSITY (GRAM/ML)	.86204	11	.85780	11		
REFRACTIVE INDEX	1.49202	11	1.48951	11		
SURFACE TENSION	28.99	(8)(60)	28.45	11		
VISCOSITY (CS)	.992	(8)(60)			.7944	11

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	6.3	43.4		71.6	94.0	135.7	159.2	21

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	7.1573	-1621.66	220.22		1.34	10.
EQUATION 2	53.180	-6991.2	-5.00	-7.9504	.43	10.

FLASH POINT(DEG C)	(CC)	REF	(OC)	REF
	30.	1,3,4	39.	19(K)

FLAMMABLE LIMITS	LOWER		UPPER	
	VOL PER	REF	VOL PER	REF
	.88	8(DD)		

AUTOIGNITION TEMPERATURE

DEG C	DELAY(SEC)	REF	DEG C	REF
456.	12.	49		

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                         STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

ISOPROPYLBENZENE

SYNONYMS. CUMENE, 2-PHENYLPROPANE, CUMOL
FORMULA= C9H12   C/H= 8.937 MW= 120.196 VD= 4.1447

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF LIQUID   (NET)   1183.40   9846.   11
                       (GROSS)   1246.52   10371.   11
HEAT OF VAPORIZATION(25 C)   10.79   89.77   11
----
                       20 C   REF   25 C   REF   37.78 C   REF
DENSITY (GRAM/ML) .86179   11   .85751   11
REFRACTIVE INDEX   1.49145   11   1.48890   11
SURFACE TENSION   28.20   (8)(60)   27.68   11
VISCOSITY (CS)   .916   (8)(60)   .740   11

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   2.9   38.3   66.1   88.1   129.2   152.4   21

VAPOR PRESSURE EQUATION COEFFICIENTS
              A   B   C   D   MAX ERR AT P
EQUATION 1   6.9254   -1453.49   206.98   .18   40.
EQUATION 2   84.946   -8416.2   -9.69   27.9321   .32   40.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                      39.   1,4   46.   10(L)
                      44.   3

,+--
FLAMMABLE LIMITS   LOWER   UPPER
              VOL PER   REF   VOL PER   REF
          .88 AT 100 C (8)(15)   6.5 AT 100 C   (8)(15)
              0.91   14(U)   6.4   14(U)

AUTOIGNITION TEMPERATURE
     DEG C DELAY(SEC) REF   DEG C   REF
     467.   6.   49   424.   3,4

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                         STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

266

1-METHYL-2-ETHYLBENZENE

SYNONYMS. O-ETHYLTOLUENE, 2-ETHYLTOLUENE
FORMULA= C9H12   C/H= 8.937 MW= 120.196 VD= 4.1447

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	1182.14	9835.	11
	(GROSS)	1245.26	10360.	11
HEAT OF VAPORIZATION(25 C)		11.40	94.85	11

---

	20 C	REF	25 C	REF
DENSITY (GRAM/ML)	.88069	11	.87657	11
REFRACTIVE INDEX	1.50456	11	1.50208	11
SURFACE TENSION	30.20	(8)(60)	29.66	11
VISCOSITY (CS)				

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	9.4	47.6		76.4	99.0	141.4	165.1	21

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	7.2928	-1735.20	228.46		1.67	10.
EQUATION 2	38.901	-6358.0	-2.91	-22.0280	.66	400.

FLASH POINT(DEG C)	(CC)	REF	(OC)	REF
	43.0	19(AY)		

FLAMMABLE LIMITS	LOWER		UPPER	
	VOL PER	REF	VOL PER	REF
	.88	8(DD)		

'

AUTOIGNITION TEMPERATURE

DEG C	DELAY(SEC)	REF	DEG C	REF
447.	18.	49		

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                        STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

1-METHYL-3-ETHYLBENZENE

SYNONYMS. M-ETHYLTOLUENE, 3-ETHYLTOLUENE
FORMULA= C9H12   C/H= 8.937 MW= 120.196 VD= 4.1447

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	1181.59	9831.	11
	(GROSS)	1244.71	10356.	11
HEAT OF VAPORIZATION(25 C)		11.21	93.26	11

---

	20 C	REF	25 C	REF
DENSITY (GRAM/ML)	.86452	11	.86040	11
REFRACTIVE INDEX	1.49660	11	1.49406	11
SURFACE TENSION	29.07	(8)(60)	28.52	11
VISCOSITY (CS)				

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	7.2	44.7		73.3	95.9	137.8	161.3	21

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	7.2246	-1676.48	224.81		.95	10.
EQUATION 2	51.350	-6896.3	-4.75	-3.1771	.26	10.

FLASH POINT(DEG C)	(CC)	REF	(OC)	REF
	41.0	19(AY)		

FLAMMABLE LIMITS	LOWER		UPPER	
	VOL PER	REF	VOL PER	REF
	.88	8(DD)		

AUTOIGNITION TEMPERATURE

DEG C	DELAY(SEC)	REF	DEG C	REF
485.	18.	49		

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                        STOICH RES   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

1-METHYL-4-ETHYLBENZENE

SYNONYMS. P-ETHYLTOLUENE, 4-ETHYLTOLUENE
FORMULA= C9H12   C/H= 8.937 MW= 120.196 VD= 4.1447

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	1181.33	9828.	11
	(GROSS)	1244.45	10354.	11
HEAT OF VAPORIZATION(25 C)		11.14	92.68	11

---

	20 C	REF	25 C	REF	37.78 C	REF
DENSITY (GRAM/ML)	.86118	11	.85702	11		
REFRACTIVE INDEX	1.49500	11	1.49244	11		
SURFACE TENSION	28.84	(8)(60)	28.28	11		
VISCOSITY (CS)	.816	(8)(60)			.671	11

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	7.6	44.9		73.6	96.3	136.4	162.0	21

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	7.2217	-1668.22	223.35		-3.95	400.
EQUATION 2	32.921	-6083.6	-2.00	-42.4741	-2.57	400.

FLASH POINT(DEG C)	(CC)	REF	(OC)	REF
	42.0	19(AY)		

FLAMMABLE LIMITS	LOWER		UPPER	
	VOL PER	REF	VOL PER	REF
	.88	8(DD)		

AUTOIGNITION TEMPERATURE

DEG C	DELAY(SEC)	REF	DEG C	REF
483.	12.	49		

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

1,2,3-TRIMETHYLBENZENE

SYNONYMS. HEMIMELLITENE
FORMULA= C9H12   C/H= 8.937 MW= 120.196 VD= 4.1447

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF LIQUID   (NET)   1179.24   9811.   11
                      (GROSS)   1242.36   10336.   11
HEAT OF VAPORIZATION(25 C)   11.73   97.59   11
----
                      20 C   REF   25 C   REF
DENSITY (GRAM/ML)
REFRACTIVE INDEX
SURFACE TENSION
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   16.8   55.9   85.4   108.8   152.0 176.1   21

VAPOR PRESSURE EQUATION COEFFICIENTS
              A   B   C   D   MAX ERR AT P
EQUATION 1   7.3201   -1794.28   228.26   1.34   10.
EQUATION 2   44.302   -6777.1   -3.69   -10.2534   .56   10.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
                   VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
     DEG C   DELAY(SEC)   REF   DEG C   REF
     449.   18.   49

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                              STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

270

1,2,4-TRIMETHYLBENZENE

SYNONYMS. PSEUDOCUMENE
FORMULA= C9H12   C/H= 8.937   MW= 120.196   VD= 4.1447

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	1178.46	9804.	11
	(GROSS)	1241.58	10330.	11
HEAT OF VAPORIZATION(25 C)		11.46	95.34	11

	20 C	REF	25 C	REF	30 C	REF
DENSITY (GRAM/ML)	.87582	11	.87180	11		
REFRACTIVE INDEX	1.50484	11	1.50237	11		
SURFACE TENSION	29.71	(8)(60)	29.19	11	28.67	19
VISCOSITY (CS)	1.151	(8)(60)			.936	19

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	13.6	50.7		79.8	102.8	145.4	169.2	21

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	7.0301	-1576.45	210.66		-.37	10.
EQUATION 2	81.643	-8537.8	-9.17	34.7333	-.34	10.

FLASH POINT(DEG C)	(CC)	REF	(OC)	REF
	46.0	19(AY)	54.5	(8)(9)(L)

FLAMMABLE LIMITS	LOWER		UPPER	
	VOL PER	REF	VOL PER	REF
	.88	8(DD)		

AUTOIGNITION TEMPERATURE

DEG C	DELAY(SEC)	REF	DEG C	REF
521.	24.	49	528.	50

MAX FLAME VEL(CM/SEC)	FLAME TEMP(DEG K)	VOL PERCENT FUEL
34.3 (62)(P)	2324 (62)	1.87 (73)
	STOICH REF	ABS MIN REF

MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

1,3,5-TRIMETHYLBENZENE

SYNONYMS. MESITYLENE
FORMULA= C9H12   C/H= 8.937 MW= 120.196 VD= 4.1447

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	1178.07	9801.	11
	(GROSS)	1241.19	10326.	11
HEAT OF VAPORIZATION(25 C)		11.35	94.43	11

---

	20 C	REF	25 C	REF
DENSITY (GRAM/ML)	.86518	11	.86111	11
REFRACTIVE INDEX	1.49937	11	1.49684	11
SURFACE TENSION	28.83	(8)(60)	28.31	11
VISCOSITY (CS)				

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	9.6	47.4		76.1	98.9	141.0	164.7	21

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	7.2327	-1691.94	224.28		1.16	10.
EQUATION 2	49.925	-6895.2	-4.52	-6.6180	-.44	40.

FLASH POINT(DEG C)	(CC)	REF	(OC)	REF
	43.0	19(AY)		

FLAMMABLE LIMITS	LOWER		UPPER	
	VOL PER	REF	VOL PER	REF
	.88	8(DD)		

AUTOIGNITION TEMPERATURE

DEG C	DELAY(SEC)	REF	DEG C	REF
559.	48.	49	621.	40(N)
577.		50		

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                          STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

N-BUTYLBENZENE

SYNONYMS. 1-PHENYLBUTANE
FORMULA= C10H14   C/H= 8.512   MW= 134.223   VD= 4.6284

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	1329.82	9908.	11
	(GROSS)	1403.46	10456.	11
HEAT OF VAPORIZATION(25 C)		11.98	89.25	11

---

	20 C	REF	25 C	REF	37.78 C	REF
DENSITY (GRAM/ML)	.86013	11	.85607	11		
REFRACTIVE INDEX	1.48979	11	1.48742	11		
SURFACE TENSION	29.19	19				
VISCOSITY (CS)	1.200	(8)(60)			.947	11

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	22.7	62.0		92.4	116.2	159.2	183.1	21

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	7.4428	-1891.26	231.43		-.59	10.
EQUATION 2	57.871	-7576.2	-5.67	24.2707	-.56	400.

FLASH POINT(DEG C)	(CC)	REF	(OC)	REF
	57.0	19(AY)	71.	(1,3,4,10)(L)

FLAMMABLE LIMITS	LOWER		UPPER	
	VOL PER	REF	VOL PER	REF
	.8	3,4,(8)(15)	5.8	3,4,(8)(15)

AUTOIGNITION TEMPERATURE

DEG C	DELAY(SEC)	REF	DEG C	REF
438.	6.	49	412.	3,4

MAX FLAME VEL(CM/SEC)	FLAME TEMP(DEG K)	VOL PERCENT FUEL
35.9 (62)(P)	2327 (62)	1.65 (73)
	STOICH REF	ABS MIN REF

MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

ISOBUTYLBENZENE

SYNONYMS. 1-PHENYL-2-METHYLPROPANE
FORMULA= C10H14   C/H= 8.512   MW= 134.223   VD= 4.6284

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF LIQUID   (NET)   1331.20   9918.   11
                     (GROSS)   1404.84   10466.   11
HEAT OF VAPORIZATION(25 C)   11.82   88.06   11
----
                     20 C   REF   25 C   REF   30 C   REF
DENSITY (GRAM/ML)   .85321   11   .84907   11   .84492   19
REFRACTIVE INDEX   1.48646   11   1.48400   11   1.48456   19
SURFACE TENSION   28.26   19   27.18   19
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   14.1   53.7   83.3   107.0   149.6   172.8   21

  VAPOR PRESSURE EQUATION COEFFICIENTS
              A   B   C   D   MAX ERR AT P
EQUATION 1   7.5952 -1972.70   245.60   -1.08   40.
EQUATION 2 38.798   -6379.4   -2.93   5.1250   -1.04   40.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                      52.   1,4   60.   10(L)
                      49.0   19(AY)

FLAMMABLE LIMITS   LOWER   UPPER
                 VOL PER   REF   VOL PER   REF
                    .8   3,4   6.0   3,4

AUTOIGNITION TEMPERATURE
       DEG C   DELAY(SEC)   REF   DEG C   REF
       456.   12.   49   428.   1,3,4

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                          STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

SEC-BUTYLBENZENE

SYNONYMS. 2-PHENYLBUTANE
FORMULA= C10H14   C/H= 8.512   MW= 134.223   VD= 4.6284

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	1331.30	9919.	11
	(GROSS)	1404.94	10467.	11
HEAT OF VAPORIZATION(25 C)		11.83	88.14	11

---

	20 C	REF	25 C	REF	30 C	REF
DENSITY (GRAM/ML)	.86207	11	.85797	11	.85387	19
REFRACTIVE INDEX	1.49020	11	1.48779	11	1.48539	19
SURFACE TENSION	29.46	19			28.35	19
VISCOSITY (CS)						

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	18.6	57.0		86.2	109.5	150.3	173.5	21

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	7.6089	-1932.89	235.44		1.24	100.
EQUATION 2	51.232	-7214.9	-4.67	12.9716	1.25	100.

FLASH POINT(DEG C)	(CC)	REF	(OC)	REF	
	49.	4	63.	(1,4,10)(L)	
	52.	3	49.	19(K)	

FLAMMABLE LIMITS	LOWER		UPPER	
	VOL PER	REF	VOL PER	REF
	.8	3,4	5.8	4
			6.9	3

AUTOIGNITION TEMPERATURE

DEG C	DELAY(SEC)	REF	DEG C	REF
418.		3,4	443.	(22)(30)
447.	18.	49		

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

STOICH REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

T-BUTYLBENZENE

SYNONYMS. 2-PHENYL-2-METHYLPROPANE
FORMULA= C10H14   C/H= 8.512 MW= 134.223 VD= 4.6284

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	1328.80	9900.	11
	(GROSS)	1402.44	10449.	11
HEAT OF VAPORIZATION(25 C)		11.73	87.39	11

---

	20 C	REF	25 C	REF	30 C	REF
DENSITY (GRAM/ML)	.86650	11	.86240	11	.85826	19
REFRACTIVE INDEX	1.49266	11	1.49024	11	1.48784	19
SURFACE TENSION	30.07	19			28.94	19
VISCOSITY (CS)						

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	13.0	51.7		80.8	103.8	145.8	168.5	21

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	7.5581	-1908.64	239.50		.86	10.
EQUATION 2	44.529	-6689.4	-3.74	6.4522	.68	10.

FLASH POINT(DEG C)	(CC)	REF	(OC)	REF
	46.0	19(AY)	60.	(1,3,10)(L)

FLAMMABLE LIMITS   LOWER   UPPER

	VOL PER	REF		VOL PER	REF
	.7 AT 100 C	3	5.7	AT 100 C	3
	.8	4		5.6	4

AUTOIGNITION TEMPERATURE

DEG C	DELAY(SEC)	REF	DEG C	REF
450.		3,4	448.	(22)(30)
477.	72.	49		

MAX FLAME VEL(CM/SEC)	FLAME TEMP(DEG K)	VOL PERCENT FUEL
36.6 (62)(P)	2321 (62)	1.61 (73)
	STOICH REF	ABS MIN REF

MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

1-METHYL-3-N-PROPYLBENZENE

SYNONYMS. M-PROPYLTOLUENE
FORMULA= C10H14   C/H= 8.512   MW= 134.223   VD= 4.6234

	KCAL/MOLE	CAL/GRAM	REF
HEAT OF COMBUSTION (NET)			
(GROSS)			
HEAT OF VAPORIZATION(25 C)			

---

	20 C	REF	25 C	REF	30 C	REF
DENSITY (GRAM/ML)	.8609	11	.8569	11	.8530	19
REFRACTIVE INDEX	1.4935	11	1.4911	11	1.4887	19
SURFACE TENSION	29.31	19			28.23	19
VISCOSITY (CS)						

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	23.1	61.4	84.3		114.2		181.8	19

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	7.1397	-1673.99	211.34		-.57	100.
EQUATION 2	67.382	-8158.3	-7.00	8.3990	.07	30.

FLASH POINT(DEG C)	(CC)	REF	(OC)	REF
	56.0	19(AY)		

FLAMMABLE LIMITS	LOWER		UPPER	
	VOL PER	REF	VOL PER	REF

AUTOIGNITION TEMPERATURE

DEG C	DELAY(SEC)	REF	DEG C	REF

MAX FLAME VEL(CM/SEC)	FLAME TEMP(DEG K)		VOL PERCENT FUEL	
	STOICH	REF	ABS MIN	REF

MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

1-METHYL-4-N-PROPYLBENZENE

SYNONYMS. P-PROPYLTOLUENE
FORMULA= C10H14   C/H= 8.512 MW= 134.223 VD= 4.6284

                              KCAL/MOLE   CAL/GRAM   REF
HEAT OF COMBUSTION (NET)
                  (GROSS)
HEAT OF VAPORIZATION(25 C)
----
                    20 C   REF   25 C   REF   30 C   REF
DENSITY (GRAM/ML) .8584   11   .8544   11   .8504   19
REFRACTIVE INDEX 1.4922   11   1.4898   11   1.4870   19
SURFACE TENSION   28.96   19   27.89   19
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   23.3   61.9   84.9   115.1   183.3   19

 VAPOR PRESSURE EQUATION COEFFICIENTS
              A   B   C   D   MAX ERR AT P
EQUATION 1   7.1230 -1677.08   212.12   .63   10.
EQUATION 2   65.703 -8058.2   -6.77   7.3356   -.12   30.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                     57.0   19(AY)

FLAMMABLE LIMITS   LOWER   UPPER
                  VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
        DEG C   DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                              STOICH REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

278

1-METHYL-2-ISOPROPYLBENZENE

SYNONYMS. O-CYMENE, 2-ISOPROPYLTOLUENE
FORMULA= C10H14   C/H= 8.512 MW= 134.223 VD= 4.6284

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	1329.00	9901.	11
	(GROSS)	1402.64	10450.	11
HEAT OF VAPORIZATION(25 C)		12.10	90.15	11

---

	20 C	REF	25 C	REF	30 C	REF
DENSITY (GRAM/ML)	.8766	11	.8726	11	.8530	19
REFRACTIVE INDEX	1.5005	11	1.4983	11	1.4881	19
SURFACE TENSION	29.31	19			28.23	19
VISCOSITY (CS)			1.0210	19		

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	19.1	57.3	80.2		110.2		178.2	19

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	7.0761	-1638.06	212.37		-.51	100.
EQUATION 2	67.605	-8015.9	-7.08	11.3318	.05	30.

FLASH POINT(DEG C)	(CC)	REF	(OC)	REF
	53.0	19(AY)		

FLAMMABLE LIMITS	LOWER		UPPER	
	VOL PER	REF	VOL PER	REF
	.8	8(DD)		

AUTOIGNITION TEMPERATURE
        DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                        STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

1-METHYL-3-ISOPROPYLBENZENE

SYNONYMS. M-CYMENE, 3-ISOPROPYLTOLUENE
FORMULA= C10H14   C/H= 8.512 MW= 134.223 VD= 4.6284

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	1328.40	9897.	11
	(GROSS)	1402.04	10446.	11
HEAT OF VAPORIZATION(25 C)		11.94	88.96	11

----

	20 C	REF	25 C	REF	30 C	REF
DENSITY (GRAM/ML)	.8610	11	.8570	11	.8530	19
REFRACTIVE INDEX	1.4929	11	1.4905	11	1.4881	19
SURFACE TENSION	29.31	19			28.23	19
VISCOSITY (CS)			1.0210	19		

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	17.1	55.0		84.3	107.6	150.9	175.1	21

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	7.0534	-1613.81	211.68		.44	10.
EQUATION 2	72.279	-8184.5	-7.77	19.3165	-.13	40.

FLASH POINT(DEG C)	(CC)	REF	(OC)	REF
	50.0	19(AY)		

FLAMMABLE LIMITS	LOWER			UPPER	
	VOL PER	REF		VOL PER	REF
	.8	8(DD)			

AUTOIGNITION TEMPERATURE
      DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                        STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

1-METHYL-4-ISOPROPYLBENZENE

SYNONYMS. P-CYMENE, 4-ISOPROPYLTOLUENE
FORMULA= C10H14   C/H= 8.512   MW= 134.223   VD= 4.6284

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	1328.40	9897.	11
	(GROSS)	1402.04	10446.	11
HEAT OF VAPORIZATION(25 C)		12.02	89.55	11

---

	20 C	REF	25 C	REF	30 C	REF
DENSITY (GRAM/ML)	.8573	11	.8533	11	.8493	19
REFRACTIVE INDEX	1.4909	11	1.4885	11	1.4859	19
SURFACE TENSION	28.61	19			27.74	19
VISCOSITY (CS)			.9296	19		

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	17.3	57.0		87.0	110.8	153.5	177.2	21

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	7.5681	-1968.06	242.73		-.61	40.
EQUATION 2	40.187	-6533.9	-3.12	4.1575	-.57	40.

FLASH POINT(DEG C)	(CC)	REF	(OC)	REF
	47.	1,3,4	63.	4
	53.	3(AD)		

FLAMMABLE LIMITS	LOWER		UPPER	
	VOL PER	REF	VOL PER	REF
	.7 AT 100 C	1,3,4	5.6	3(AD),4
	.85	(8)(15)	5.5	(8)(15)

AUTOIGNITION TEMPERATURE

DEG C	DELAY(SEC)	REF	DEG C	REF
494.		1	445.	3(AD)
436.		3,4	466.	40(N)
445.		(22)(42)		

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                         STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

1,2-DIETHYLBENZENE

SYNONYMS.
FORMULA= C10H14   C/H= 8.512 MW= 134.223 VD= 4.6284

                              KCAL/MOLE   CAL/GRAM   REF
HEAT OF COMBUSTION (NET)
                   (GROSS)
HEAT OF VAPORIZATION(25 C)   12.61   93.95   11

DENSITY (GRAM/ML)
REFRACTIVE INDEX
SURFACE TENSION
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   22.3   62.0   92.5   116.2   159.0   183.5   21

  VAPOR PRESSURE EQUATION COEFFICIENTS
              A   B   C   D   MAX ERR AT P
EQUATION 1 7.5085 -1940.84   236.18   -1.11   400.
EQUATION 2 41.026 -6733.6   -3.21   -3.7928   -.79   400.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                      360.   1,3,4

FLAMMABLE LIMITS   LOWER   UPPER
                  VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
        DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                          STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

282

1,3-DIETHYLBENZENE

SYNONYMS. M-DIETHYLBENZENE
FORMULA= C10H14   C/H= 8.512 MW= 134.223 VD= 4.6284

	KCAL/MOLE	CAL/GRAM	REF
HEAT OF COMBUSTION (NET)			
(GROSS)			
HEAT OF VAPORIZATION(25 C)	12.55	93.50	11

----

	20 C	REF	25 C	REF	3C C	REF
DENSITY (GRAM/ML)	.86394	11	.85993	11	.85590	19
REFRACTIVE INDEX	1.49552	11	1.49310	11	1.49050	19
SURFACE TENSION	29.71	19			28.62	19
VISCOSITY (CS)						

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	20.7	59.9		90.4	114.4	156.9	181.1	21

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	7.4565	-1899.58	234.10		1.34	100.
EQUATION 2	57.244	-7469.5	-5.60	27.3957	-1.36	400.

FLASH POINT(DEG C)	(CC)	REF	(OC)	REF
	55.5	1(AF)		
	56.	19(AY)		
	56.	3,4		

FLAMMABLE LIMITS   LOWER   UPPER
                VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE

DEG C	DELAY(SEC)	REF	DEG C	REF
455.	12.	49	430.	3,1(AF)

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                         STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

1,4-DIETHYLBENZENE

SYNONYMS. P-DIETHYLBENZENE
FORMULA= C10H14   C/H= 8.512   MW= 134.223   VD= 4.6284

	KCAL/MOLE	CAL/GRAM	REF
HEAT OF COMBUSTION (NET)			
(GROSS)			
HEAT OF VAPORIZATION(25 C)	12.54	93.43	11

----

	20 C	REF	25 C	REF	30 C	REF
DENSITY (GRAM/ML)	.86196	11	.85794	11	.85390	19
REFRACTIVE INDEX	1.49483	11	1.49245	11	1.48981	19
SURFACE TENSION	29.44	19			28.36	19
VISCOSITY (CS)						

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	20.7	60.3		91.1	115.2	159.0	183.8	21

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	7.3086	-1831.25	229.88		-.57	400.
EQUATION 2	54.489	-7307.0	-5.21	16.8382	-.72	400.

FLASH POINT(DEG C)	(CC)	REF	(OC)	REF
	55.5	1(AF)		
	57.	19(AY)		
	56.5	3,4		

FLAMMABLE LIMITS	LOWER		UPPER	
	VOL PER	REF	VOL PER	REF

AUTOIGNITION TEMPERATURE

DEG C	DELAY(SEC)	REF	DEG C	REF
451.	12.	49	430.	3,4,1(AF)

MAX FLAME VEL(CM/SEC)	FLAME TEMP(DEG K)		VOL PERCENT FUEL	
	STOICH	REF	ABS MIN	REF

MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

1,2-DIMETHYL-3-ETHYLBENZENE

SYNONYMS. 3-ETHYL-O-XYLENE
FORMULA= C10H14   C/H= 8.512 MW= 134.223 VD= 4.6284

	KCAL/MOLE	CAL/GRAM	REF
HEAT OF COMBUSTION (NET)			
(GROSS)			
HEAT OF VAPORIZATION(25 C)	13.11	97.67	11

---

	20 C	REF	25 C	REF	30 C	REF
DENSITY (GRAM/ML)	.8921	11	.8881	11	.8841	19
REFRACTIVE INDEX	1.5117	11	1.5095	11	1.5068	19
SURFACE TENSION	33.78	19			32.58	19
VISCOSITY (CS)						

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	31.7	71.0	94.4		125.0		193.9	19

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	7.1907	-1743.93	210.80		-.54	100.
EQUATION 2	66.614	-8363.3	-6.85	8.1452	.01	10.

FLASH POINT(DEG C)	(CC)	REF	(OC)	REF
	65.	19(AY)		

FLAMMABLE LIMITS	LOWER		UPPER	
	VOL PER	REF	VOL PER	REF

AUTOIGNITION TEMPERATURE

DEG C	DELAY(SEC)	REF	DEG C	REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

	STOICH	REF	ABS MIN	REF
MIN IGN ENERGY(MILLIJOULE)=				
QUENCHING DISTANCE(CM)=				

1,2-DIMETHYL-4-ETHYLBENZENE

SYNONYMS. 4-ETHYL-O-XYLENE
FORMULA= C10H14   C/H= 8.512   MW= 134.223   VD= 4.6284

	KCAL/MOLE	CAL/GRAM	REF
HEAT OF COMBUSTION (NET)			
(GROSS)			
HEAT OF VAPORIZATION(25 C)	12.89	96.03	11

----

	20 C	REF	25 C	REF	30 C	REF
DENSITY (GRAM/ML)	.8745	11	.8706	11	.8667	19
REFRACTIVE INDEX	1.5031	11	1.5009	11	1.4983	19
SURFACE TENSION	31.19	19			30.09	19
VISCOSITY (CS)						

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	28.9	67.8	91.1		121.4		189.7	19

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	7.1754	-1719.65	210.74		-.48	100.
EQUATION 2	68.817	-8395.8	-7.18	11.8053	.09	30.

FLASH POINT(DEG C)	(CC)	REF	(OC)	REF
	71.	19(AY)		

FLAMMABLE LIMITS	LOWER		UPPER	
	VOL PER	REF	VOL PER	REF

AUTOIGNITION TEMPERATURE

DEG C	DELAY(SEC)	REF	DEG C	REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                         STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

1,3-DIMETHYL-2-ETHYLBENZENE

SYNONYMS. 2-ETHYL-M-XYLENE
FORMULA= C10H14   C/H= 8.512   MW= 134.223   VD= 4.6284

	KCAL/MOLE	CAL/GRAM	REF
HEAT OF COMBUSTION (NET)			
(GROSS)			
HEAT OF VAPORIZATION(25 C)	12.88	95.96	11

	20 C	REF	25 C	REF	30 C	REF
DENSITY (GRAM/ML)	.8904	11	.8864	11	.8824	19
REFRACTIVE INDEX	1.5107	11	1.5085	11	1.5054	19
SURFACE TENSION	33.52	19			32.33	19
VISCOSITY (CS)						

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	28.9	67.9	91.2		121.6		190.0	19

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	7.1800	-1725.24	211.36		-.53	100.
EQUATION 2	66.661	-8284.4	-6.87	8.5466	.01	30.

FLASH POINT(DEG C)	(CC)	REF	(OC)	REF
	62.	19(AY)		

FLAMMABLE LIMITS	LOWER		UPPER	
	VOL PER	REF	VOL PER	REF

AUTOIGNITION TEMPERATURE				
DEG C	DELAY(SEC)	REF	DEG C	REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

		STOICH	REF	ABS MIN	REF

MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

1,3-DIMETHYL-5-ETHYLBENZENE

SYNONYMS. 5-ETHYL-M-XYLENE
FORMULA= C10H14   C/H= 8.512 MW= 134.223 VD= 4.6284

                                  KCAL/MOLE   CAL/GRAM   REF
HEAT OF COMBUSTION (NET)
                    (GROSS)
HEAT OF VAPORIZATION(25 C)   12.52   93.28   11
----
                      20 C   REF   25 C   REF   30 C   REF
DENSITY (GRAM/ML)   .8648   11   .8608   11   .8568   19
REFRACTIVE INDEX   1.4981 11   1.4958   11   1.4931 19
SURFACE TENSION   29.83   19   28.74   19
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   24.4   63.0   86.0   116.1   183.7   19

 VAPOR PRESSURE EQUATION COEFFICIENTS
            A   B   C   D   MAX ERR AT P
EQUATION 1 7.1886   -1711.77   213.70   -.54   100.
EQUATION 2 64.310   -8035.7   -6.55   6.6408   .01   30.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                      57.   19(AY)

FLAMMABLE LIMITS   LOWER   UPPER
                  VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
        DEG C   DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                          STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

288

1,4-DIMETHYL-2-ETHYLBENZENE

SYNONYMS. 2-ETHYL-P-XYLENE
FORMULA= C10H14   C/H= 8.512   MW= 134.223   VD= 4.6284

	KCAL/MOLE	CAL/GRAM	REF
HEAT OF COMBUSTION (NET)			
(GROSS)			
HEAT OF VAPORIZATION(25 C)	12.58	93.72	11

---

	20 C	REF	25 C	REF	30 C	REF
DENSITY (GRAM/ML)	.8772	11	.8732	11	.8692	19
REFRACTIVE INDEX	1.5043	11	1.5020	11	1.4994	19
SURFACE TENSION	31.58	19			30.44	19
VISCOSITY (CS)						

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	25.9	64.9	88.1		118.5		186.9	19

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	7.1787	-1723.09	214.10		.64	10.
EQUATION 2	61.888	-7939.9	-6.20	3.3879	-.08	30.

FLASH POINT(DEG C)	(CC)	REF	(OC)	REF
	60.	19(AY)		

FLAMMABLE LIMITS	LOWER		UPPER	
	VOL PER	REF	VOL PER	REF

AUTOIGNITION TEMPERATURE

DEG C	DELAY(SEC)	REF	DEG C	REF

MAX FLAME VEL(CM/SEC)	FLAME TEMP(DEG K)		VOL PERCENT FUEL	
	STOICH	REF	ABS MIN	REF

MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

2,4-DIMETHYL-1-ETHYLBENZENE

SYNONYMS. 1,3-DIMETHYL-4-ETHYLBENZENE, 4-ETHYL-M-XYLENE
FORMULA= C10H14   C/H= 8.512   MW= 134.223   VD= 4.6284

	KCAL/MOLE	CAL/GRAM	REF
HEAT OF COMBUSTION (NET)			
(GROSS)			
HEAT OF VAPORIZATION(25 C)	12.74	94.92	11

---

	20 C	REF	25 C	REF	30 C	REF
DENSITY (GRAM/ML)	.8763	11	.8723	11	.8683	19
REFRACTIVE INDEX	1.5037	11	1.5015	11	1.4990	19
SURFACE TENSION	31.45	19			30.31	19
VISCOSITY (CS)						

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	27.5	66.5	89.7		120.0		188.4	19

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	7.1876	-1727.73	212.85		.64	10.
EQUATION 2	63.431	-8077.1	-6.41	4.2421	-.09	30.

FLASH POINT(DEG C)	(CC)	REF	(OC)	REF
	61.	19(AY)		

FLAMMABLE LIMITS	LOWER		UPPER	
	VOL PER	REF	VOL PER	REF

AUTOIGNITION TEMPERATURE

DEG C	DELAY(SEC)	REF	DEG C	REF

MAX FLAME VEL(CM/SEC)	FLAME TEMP(DEG K)		VOL PERCENT FUEL	
	STOICH	REF	ABS MIN	REF

MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

1,2,3,4-TETRAMETHYLBENZENE

SYNONYMS. PREHNITENE
FORMULA= C10H14   C/H= 8.512 MW= 134.223 VD= 4.6284

	KCAL/MOLE	CAL/GRAM	REF
HEAT OF COMBUSTION (NET)			
(GROSS)			
HEAT OF VAPORIZATION(25 C)	13.66	101.77	11

----

	20 C	REF	25 C	REF	30 C	REF
DENSITY (GRAM/ML)	.9052	11	.9015	11	.8978	19
REFRACTIVE INDEX	1.5203	11	1.5181	11	1.5155	19
SURFACE TENSION	35.81	19			34.65	19
VISCOSITY (CS)						

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	42.6	81.8		111.5	135.7	180.0	204.4	21

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	7.1275	-1700.46	195.94		-1.28	40.
EQUATION 2	90.142	-10007.1	-10.16	29.4292	-1.12	40.

FLASH POINT(DEG C)	(CC)	REF	(OC)	REF
	73.	19(AY)		

FLAMMABLE LIMITS	LOWER		UPPER	
	VOL PER	REF	VOL PER	REF

AUTOIGNITION TEMPERATURE

DEG C	DELAY(SEC)	REF	DEG C	REF

MAX FLAME VEL(CM/SEC)	FLAME TEMP(DEG K)		VOL PERCENT FUEL	
	STOICH	REF	ABS MIN	REF

MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

291

1,2,3,5-TETRAMETHYLBENZENE

SYNONYMS. ISODURENE
FORMULA= C10H14   C/H= 8.512   MW= 134.223   VD= 4.6284

	KCAL/MOLE	CAL/GRAM	REF
HEAT OF COMBUSTION (NET)			
(GROSS)			
HEAT OF VAPORIZATION(25 C)	13.34	99.39	11

---

	20 C	REF	25 C	REF	30 C	REF
DENSITY (GRAM/ML)	.8903	11	.8865	11	.8827	19
REFRACTIVE INDEX	1.5130	11	1.5107	11	1.5074	19
SURFACE TENSION	33.51	19			32.38	19
VISCOSITY (CS)						

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	40.6	77.8		105.8	128.3	173.7	197.9	21

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	6.6524	-1369.46	165.13		3.55	10.
EQUATION 2	121.444	-11747.3	-14.61	19.3454	2.58	400.

FLASH POINT(DEG C)	(CC)	REF	(OC)	REF
	68.	19(AY)		

FLAMMABLE LIMITS	LOWER		UPPER	
	VOL PER	REF	VOL PER	REF

AUTOIGNITION TEMPERATURE

DEG C	DELAY(SEC)	REF	DEG C	REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

	STOICH	REF	ABS MIN	REF
MIN IGN ENERGY(MILLIJOULE)=				
QUENCHING DISTANCE(CM)=				

1,2,4,5-TETRAMETHYLBENZENE

SYNONYMS. DURENE
FORMULA= C10H14   C/H= 8.512   MW= 134.223   VD= 4.6284

	KCAL/MOLE	CAL/GRAM	REF
HEAT OF COMBUSTION (NET)			
(GROSS)			
HEAT OF VAPORIZATION(25 C)	13.27	98.87	11

----

	20 C	REF	25 C	REF	30 C	REF
DENSITY (GRAM/ML)	.8875	11(T)	.8837	11(T)	.8799	19
REFRACTIVE INDEX	1.5116	11(T)	1.5093	11(T)	1.5073	19
SURFACE TENSION	33.09	19			31.97	19
VISCOSITY (CS)						

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	45.0	74.6		104.2	128.1	172.1	195.9	21

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	5.6948	-856.92	105.94		-11.21	10.
EQUATION 2	434.372	-28071.6	-60.06	453.9057	-13.75	400.

FLASH POINT(DEG C)	(CC)	REF	(OC)	REF
	67.	19(AY)		

FLAMMABLE LIMITS   LOWER   UPPER
                VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
        DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                          STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

N-PENTYLBENZENE

SYNONYMS. N-AMYLBENZENE, 1-PHENYLPENTANE
FORMULA= C11H16   C/H= 8.192   MW= 148.250   VD= 5.1121

	KCAL/MOLE	CAL/GRAM	REF
HEAT OF COMBUSTION (NET)			
(GROSS)			
HEAT OF VAPORIZATION(25 C)			

----

	20 C	REF	25 C	REF	30 C	REF
DENSITY (GRAM/ML)	.8585	11	.8507	19		
REFRACTIVE INDEX	1.4878	11	1.4830	19		
SURFACE TENSION	29.41	19	28.35	19		
VISCOSITY (CS)						

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	40.7	80.6	104.3		135.4		205.4	19

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	7.1834	-1765.81	205.09		.59	10.
EQUATION 2	71.251	-8893.4	-7.47	9.2062	-.08	30.

FLASH POINT(DEG C)	(CC)	REF	(OC)	REF
			65.5	1,3,4

FLAMMABLE LIMITS	LOWER		UPPER	
	VOL PER	REF	VOL PER	REF

AUTOIGNITION TEMPERATURE

DEG C	DELAY(SEC)	REF	DEG C	REF
255.		(22)(33)(B)		

MAX FLAME VEL(CM/SEC)	FLAME TEMP(DEG K)		VOL PERCENT FUEL	
	STOICH	REF	ABS MIN	REF

MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

SEC-PENTYLBENZENE

SYNONYMS. (1-METHYLBUTYL)BENZENE, 2-PHENYLPENTANE
FORMULA= C11H16   C/H= 8.192 MW= 148.250 VD= 5.1121

                              KCAL/MOLE   CAL/GRAM   REF
HEAT OF COMBUSTION (NET)
                    (GROSS)
HEAT OF VAPORIZATION(25 C)
----
                      20 C   REF   30 C   REF
DENSITY (GRAM/ML) .8585   19   .8507   19
REFRACTIVE INDEX 1.4876   19   1.4829   19
SURFACE TENSION   29.41   19   28.35   19
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   31.0   70.0   93.4   123.9   193.0   19

 VAPOR PRESSURE EQUATION COEFFICIENTS
             A   B   C   D   MAX ERR AT P
EQUATION 1   7.1137   -1692.27   206.87   -.56   100.
EQUATION 2 72.056   -8623.8   -7.64   12.5246   .18   30.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                                            68.5   10(L)

FLAMMABLE LIMITS   LOWER   UPPER
                VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
        DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                              STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

295

1-METHYL-3,5-DIETHYLBENZENE

SYNONYMS. 3,5-DIETHYLTOLUENE
FORMULA= C11H16   C/H= 8.192 MW= 148.250 VD= 5.1121

                              KCAL/MOLE   CAL/GRAM   REF
HEAT OF COMBUSTION (NET)
                   (GROSS)
HEAT OF VAPORIZATION(25 C)
----
                   20 C   REF   30 C   REF
DENSITY (GRAM/ML) .8630   19   .8552   19
REFRACTIVE INDEX   1.4969   19   1.4921   19
SURFACE TENSION   30.03   19   28.96   19
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   36.0 76.0   100.0   130.7   200.7   19

 VAPOR PRESSURE EQUATION COEFFICIENTS
              A   B   C   D   MAX ERR AT P
EQUATION 1   7.2386   -1801.48   212.84   -1.21   100.
EQUATION 2   56.052   -7940.8   -5.30   -9.7425   .63   30.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
              VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
      DEG C DELAY(SEC) REF   DEG C   REF
      461.   12.   49

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                          STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

296

AMYLTOLUENE

SYNONYMS.
FORMULA= C12H18   C/H= 7.944   MW= 162.277   VD= 5.5958

                             KCAL/MOLE   CAL/GRAM   REF
HEAT OF COMBUSTION (NET)
                   (GROSS)
HEAT OF VAPORIZATION(25 C)
----
                    16 C   REF
DENSITY (GRAM/ML) .8568   2(AE)
REFRACTIVE INDEX
SURFACE TENSION
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   214.0   2

  VAPOR PRESSURE EQUATION COEFFICIENTS
                    A   B   C   D   MAX ERR AT P
EQUATION 1
EQUATION 2

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                                              82.   1,3,4

FLAMMABLE LIMITS   LOWER   UPPER
                VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
        DEG C   DELAY(SEC)   REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                             STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

1,2-DIISOPROPYLBENZENE

SYNONYMS.
FORMULA= C12H18   C/H= 7.944 MW= 162.277 VD= 5.5958

                                KCAL/MOLE   CAL/GRAM   REF
HEAT OF COMBUSTION (NET)
                   (GROSS)
HEAT OF VAPORIZATION(25 C)
----
                     20 C   REF   30 C   REF
DENSITY (GRAM/ML) .8771   2   .86932   19
REFRACTIVE INDEX   1.4960   2   1.4916   19
SURFACE TENSION   32.31   19   31.19   19
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   38.6   78.7   102.6   133.7   203.8   19

  VAPOR PRESSURE EQUATION COEFFICIENTS
             A   B   C   D   MAX ERR AT P
EQUATION 1   7.2186   -1794.30   209.94   -.65 100.
EQUATION 2   64.755   -8463.7   -6.55   4.4654   .09   30.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                       77.   19(AY)   76.5   (1,3,4)(AG)

FLAMMABLE LIMITS   LOWER   UPPER
                   VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
     DEG C   DELAY(SEC)   REF   DEG C   REF
     449.   (1,3,4)(AG)

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                            STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

1,4-DIISOPROPYLBENZENE

SYNONYMS.
FORMULA= C12H18   C/H= 7.944 MW= 162.277 VD= 5.5958

                              KCAL/MOLE   CAL/GRAM   REF
HEAT OF COMBUSTION (NET)
                   (GROSS)
HEAT OF VAPORIZATION(25 C)
----
                    20 C   REF   30 C   REF
DENSITY (GRAM/ML) .8568   2   .84903   19
REFRACTIVE INDEX   1.4898   2   1.4851   19
SURFACE TENSION   29.42   19   28.38   19
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   40.0   81.8   114.0   138.7   184.3   209.0   21

 VAPOR PRESSURE EQUATION COEFFICIENTS
            A   B   C   D   MAX ERR AT P
EQUATION 1 7.5655   -2080.56   235.02   .53   40.
EQUATION 2 51.047   -7653.9   -4.63   19.6015   .61   40.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                      81.   19(AY)   76.5   1(AG)

FLAMMABLE LIMITS   LOWER   UPPER
                 VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
      DEG C   DELAY(SEC)   REF   DEG C   REF
      449.   1(AG)

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                          STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

299

1,2,4-TRIETHYLBENZENE

SYNONYMS.
FORMULA= C12H18   C/H= 7.944   MW= 162.277   VD= 5.5958

                          KCAL/MOLE   CAL/GRAM   REF
HEAT OF COMBUSTION (NET)
                  (GROSS)
HEAT OF VAPORIZATION(25 C)
----
                  20 C   REF
DENSITY (GRAM/ML) .8738   2
REFRACTIVE INDEX 1.5024   2
SURFACE TENSION
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   46.0   88.5   121.7   146.8   193.7   218.0   21

  VAPOR PRESSURE EQUATION COEFFICIENTS
              A   B   C   D   MAX ERR AT P
EQUATION 1   7.6003   -2148.82   236.79   1.55   400.
EQUATION 2   63.368   -8411.8   -6.42   53.8917   1.16   40.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                      83.   1,3

FLAMMABLE LIMITS   LOWER   UPPER
                    VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
        DEG C   DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                        STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

300

HEXAMETHYLBENZENE

SYNONYMS. MELLITENE
FORMULA= C12H18   C/H= 7.944 MW= 162.277 VD= 5.5958

                        KCAL/MOLE   CAL/GRAM   REF
HEAT OF COMBUSTION (NET)
                  (GROSS)
HEAT OF VAPORIZATION(25 C)

DENSITY (GRAM/ML)
REFRACTIVE INDEX
SURFACE TENSION
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   265.0   2

 VAPOR PRESSURE EQUATION COEFFICIENTS
                A   B   C   D   MAX ERR AT P
EQUATION 1
EQUATION 2

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
              VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
      DEG C DELAY(SEC) REF   DEG C   REF
      375.   (22)(24)

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                        STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

301

PHENYLCYCLOHEXANE

SYNONYMS. CYCLOHEXYLBENZENE
FORMULA= C12H16   C/H= 8.937   MW= 160.261   VD= 5.5263

                                 KCAL/MOLE   CAL/GRAM   REF
HEAT OF COMBUSTION (NET)
                  (GROSS)
HEAT OF VAPORIZATION(25 C)
----
                    20 C   REF
DENSITY (GRAM/ML) .9502   2
REFRACTIVE INDEX 1.5329   2
SURFACE TENSION
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   67.5   111.3   144.0   169.3   214.6   240.0   21

VAPOR PRESSURE EQUATION COEFFICIENTS
              A   B   C   D   MAX ERR AT P
EQUATION 1 7.9614 -2416.86   236.03   -.91   400.
EQUATION 2 32.533 -7532.1   -1.79   -22.8986   .33   100.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                                          99.   1,3

FLAMMABLE LIMITS   LOWER   UPPER
              VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
      DEG C   DELAY(SEC)   REF   DEG C   REF
      105.   1

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                          STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

302

BIPHENYL

SYNONYMS. DIPHENYL, PHENYLBENZENE
FORMULA= C12H10   C/H= 14.299 MW= 154.214 VD= 5.3177

                          KCAL/MOLE   CAL/GRAM   REF
HEAT OF COMBUSTION (NET)
                   (GROSS)
HEAT OF VAPORIZATION(25 C)
----
                   77 C   REF
DENSITY (GRAM/ML) 1.9896   2
REFRACTIVE INDEX   1.588   2
SURFACE TENSION
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   70.6   117.0   152.5   180.7   229.4   254.9   21

  VAPOR PRESSURE EQUATION COEFFICIENTS
              A   B   C   D   MAX ERR AT P
EQUATION 1   7.9609 -2598.32   255.90   2.24 100.
EQUATION 2   58.783 -8732.1   -5.72   82.2036   .88 100.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                      113.   1,3,4   124.   4

FLAMMABLE LIMITS   LOWER   UPPER
                 VOL PER   REF   VOL PER   REF
                 .6 AT 111 C 3   5.8 AT 155 C 3

AUTOIGNITION TEMPERATURE
      DEG C   DELAY(SEC)   REF   DEG C   REF
      259.   1   540.   3,4
      577.   36.   49

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                          STOICH REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

303

2-METHYLBIPHENYL

SYNONYMS.
FORMULA= C13H12   C/H= 12.909   MW= 168.241   VD= 5.8014

                        KCAL/MOLE   CAL/GRAM   REF
HEAT OF COMBUSTION (NET)
                  (GROSS)
HEAT OF VAPORIZATION(25 C)
----
                20 C   REF
DENSITY (GRAM/ML) 1.010   2
REFRACTIVE INDEX 1.5914   2
SURFACE TENSION
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   255.3   2

  VAPOR PRESSURE EQUATION COEFFICIENTS
                 A   B   C   D   MAX ERR AT P
EQUATION 1
EQUATION 2

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
                VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
     DEG C   DELAY(SEC)   REF   DEG C   REF
     502.   12.   49

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                           STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

304

2-ETHYLBIPHENYL

SYNONYMS.
FORMULA= C14H14   C/H= 11.916 MW= 182.268 VD= 6.2851

                            KCAL/MOLE   CAL/GRAM   REF
HEAT OF COMBUSTION (NET)
                  (GROSS)
HEAT OF VAPORIZATION(25 C)

                    .89438   11   .89044   11
DENSITY (GRAM/ML) 1.51393   11   1.51150   11
REFRACTIVE INDEX   31.27   (8)(60)   30.76   11
SURFACE TENSION
VISCOSITY (CS)   51.0   19(AY)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T

  VAPOR PRESSURE EQUATION COEFFICIENTS
              A   B   C   D   MAX ERR AT P
EQUATION 1
EQUATION 2

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
                VOL PER   REF   VOL PER   REF
                 .88   8(DD)

AUTOIGNITION TEMPERATURE
     DEG C   DELAY(SEC)   REF   DEG C   REF
     479.   24.   49   510.   50

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                         STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

NONYLBENZENE

SYNONYMS. 1-PHENYLNONANE, NONYLBENZOL
FORMULA= C15H24   C/H= 7.448 MW= 204.359 VD= 7.0468

	KCAL/MOLE	CAL/GRAM	REF
HEAT OF COMBUSTION (NET)			
(GROSS)			
HEAT OF VAPORIZATION(25 C)			

---

	20 C	REF	30 C	REF	40 C	RFF
DENSITY (GRAM/ML)	.8558	19	.8486	19		
REFRACTIVE INDEX	1.4838	11	1.4781	19		
SURFACE TENSION	29.85	19	28.86	19		
VISCOSITY (CS)	3.66	19			2.47	19

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	96.0	141.5	168.5		203.6		282.0	19

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	7.3342	-2107.53	191.33		-.52	100.
EQUATION 2	77.319	-10904.2	-8.08	14.2932	.03	30.

FLASH POINT(DEG C)	(CC)	REF	(OC)	REF
	99.	1		

FLAMMABLE LIMITS	LOWER		UPPER	
	VOL PER	REF	VOL PER	REF

AUTOIGNITION TEMPERATURE

DEG C	DELAY(SEC)	REF	DEG C	REF

MAX FLAME VEL(CM/SEC)	FLAME TEMP(DEG K)	VOL PERCENT FUEL		
	STOICH	REF	ABS MIN	REF	

MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

TRIISOPROPYLBENZENE

SYNONYMS.
FORMULA= C15H24   C/H= 7.448 MW= 204.359 VD= 7.0468

                        KCAL/MOLE   CAL/GRAM   REF
HEAT OF COMBUSTION (NET)
                  (GROSS)
HEAT OF VAPORIZATION(25 C)
----
                25 C   REF
DENSITY (GRAM/ML) .854   1
REFRACTIVE INDEX
SURFACE TENSION
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   236.5   1

   VAPOR PRESSURE EQUATION COEFFICIENTS
              A   B   C   D   MAX ERR AT P
EQUATION 1
EQUATION 2

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                     96.   1

FLAMMABLE LIMITS   LOWER   UPPER
                VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
        DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                          STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

307

2-N-PROPYLBIPHENYL

SYNONYMS.
FORMULA= C15H16   C/H= 11.171   MW= 196.295   VD= 6.7688

                              KCAL/MOLE   CAL/GRAM   REF
HEAT OF COMBUSTION (NET)
                  (GROSS)
HEAT OF VAPORIZATION(25 C)

DENSITY (GRAM/ML)
REFRACTIVE INDEX
SURFACE TENSION
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T

 VAPOR PRESSURE EQUATION COEFFICIENTS
               A   B   C   D   MAX ERR AT P
EQUATION 1
EQUATION 2

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
               VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
     DEG C DELAY(SEC) REF   DEG C   REF
     452.   18.   49

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                         STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

308

2-MONOISOPROPYLBIPHENYL

SYNONYMS.
FORMULA= C15H16   C/H= 11.171 MW= 196.295 VD= 6.7688

                          KCAL/MOLE   CAL/GRAM   REF
HEAT OF COMBUSTION (NET)
                   (GROSS)
HEAT OF VAPORIZATION(25 C)

DENSITY (GRAM/ML)
REFRACTIVE INDEX
SURFACE TENSION
VISCOSITY (CS)

VAPOR PRESSURE(MM Hg)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   270.0   3

  VAPOR PRESSURE EQUATION COEFFICIENTS
                A   B   C   D   MAX ERR AT P
EQUATION 1
EQUATION 2

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                     140.5   3

FLAMMABLE LIMITS   LOWER   UPPER
              VOL PER   REF   VOL PER   REF
              .5 AT 175 C   3   3.2 AT 200 C   3

AUTOIGNITION TEMPERATURE
     DEG C   DELAY(SEC)   REF   DEG C   REF
     434.   3

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                         STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

309

DECYLBENZENE

SYNONYMS. 1-PHENYLDECANE
FORMULA= C16H26   C/H= 7.333 MW= 218.386   VD= 7.5305

                                 KCAL/MOLE   CAL/GRAM   REF
HEAT OF COMBUSTION (NET)
                    (GROSS)
HEAT OF VAPORIZATION(25 C)
----
                    20 C   REF   30 C   REF   40 C   REF
DENSITY (GRAM/ML) .85553   19   .84825   19
REFRACTIVE INDEX 1.48319   11   1.47999   19
SURFACE TENSION   29.95   19   28.94   19
VISCOSITY (CS)   4.44   19   2.92   19

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T 109.0   156.0   184.0   220.0   300.0   19

 VAPOR PRESSURE EQUATION COEFFICIENTS
              A   B   C   D   MAX ERR AT P
EQUATION 1   7.4540   -2259.17   194.07   -.46   100.
EQUATION 2   75.514   -11172.4   -7.78   19.7925   .33   30.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                      107.   3

FLAMMABLE LIMITS   LOWER   UPPER
             VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
       DEG C   DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                         STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

2-BUTYLBIPHENYL

SYNONYMS.
FORMULA= C16H18   C/H= 10.592   MW= 210.322   VD= 7.2525

                               KCAL/MOLE   CAL/GRAM   REF
HEAT OF COMBUSTION (NET)
                   (GROSS)
HEAT OF VAPORIZATION(25 C)

DENSITY (GRAM/ML)
REFRACTIVE INDEX
SURFACE TENSION
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T

  VAPOR PRESSURE EQUATION COEFFICIENTS
                   A   B   C   D   MAX ERR AT P
EQUATION 1
EQUATION 2

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
                 VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
     DEG C   DELAY(SEC)   REF   DEG C   REF
     433.   12.   49

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                            STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

311

DIAMYLBENZENE

SYNONYMS.
FORMULA= C16H26   C/H= 7.333 MW= 218.386 VD= 7.5305

                              KCAL/MOLE   CAL/GRAM   REF
HEAT OF COMBUSTION (NET)
                    (GROSS)
HEAT OF VAPORIZATION(25 C)

DENSITY (GRAM/ML)
REFRACTIVE INDEX
SURFACE TENSION
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   265.0   1

 VAPOR PRESSURE EQUATION COEFFIC.ENTS
              A   B   C   D   MAX ERR AT P
EQUATION 1
EQUATION 2

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                     107.   1,3

FLAMMABLE LIMITS   LOWER   UPPER
                 VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
        DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                           STOICH REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

312

DODECYLBENZENE

SYNONYMS. 1-PHENYLDODECANE
FORMULA= C18H30   C/H= 7.150 MW= 246.440 VD= 8.4979

                              KCAL/MOLE   CAL/GRAM   REF
HEAT OF COMBUSTION (NET)
                    (GROSS)
HEAT OF VAPORIZATION(25 C)
----
                    20 C   REF   30 C   REF   40 C   REF
DENSITY (GRAM/ML) .8551   19   .8481   19
REFRACTIVE INDEX   1.4824   11   1.4782   19
SURFACE TENSION   30.12   19   29.14   19   28.19   19
VISCOSITY (CS)   6.39   19   4.06   19

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T 132.0 181.0   210.0   248.0   331.0   19

  VAPOR PRESSURE EQUATION COEFFICIENTS
              A   B   C   D   MAX ERR AT P
EQUATION 1 7.4598 -2360.05   184.37   -.39   30.
EQUATION 2 92.613 -12972.3   -10.09   57.7290   -.25   30.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                     140.5   1

FLAMMABLE LIMITS   LOWER   UPPER
                 VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
        DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                              STOICH REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

313

1,2-DIPHENYLBENZENE

SYNONYMS. O-TERPHENYL, O-PHENYLBIPHENYL
FORMULA= C18H14   C/H= 15.321 MW= 230.312 VD= 7.9418

                              KCAL/MOLE   CAL/GRAM   REF
HEAT OF COMBUSTION (NET)
                 (GROSS)
HEAT OF VAPORIZATION(25 C)

DENSITY (GRAM/ML)
REFRACTIVE INDEX
SURFACE TENSION
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   332.0   2

  VAPOR PRESSURE EQUATION COEFFICIENTS
                 A   B   C   D   MAX ERR AT P
EQUATION 1
EQUATION 2

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                                           163.   1,3,4

FLAMMABLE LIMITS   LOWER   UPPER
                   VOL PER   REF   VOL PER   REF

                             .

AUTOIGNITION TEMPERATURE
      DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                              STOICH REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

314

1,3-DIPHENYLBENZENE

SYNONYMS. M-TERPHENYL, M-PHENYLBIPHENYL
FORMULA= C18H14   C/H= 15.321   MW= 230.312   VD= 7.9418
-- ---
                              KCAL/MOLE   CAL/GRAM   REF
HEAT OF COMBUSTION (NET)
                   (GROSS)
HEAT OF VAPORIZATION(25 C)

DENSITY (GRAM/ML)
REFRACTIVE INDEX
SURFACE TENSION
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   365.0   2

 VAPOR PRESSURE EQUATION COEFFICIENTS
                  A   B   C   D   MAX ERR AT P
EQUATION 1
EQUATION 2

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                                               184.   1,3,4

FLAMMABLE LIMITS   LOWER   UPPER
               VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
       DEG C   DELAY(SEC)   REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                              STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

315

1,4-DIPHENYLBENZENE

SYNONYMS. P-TERPHENYL, P-PHENYLBIPHENYL
FORMULA= C18H14   C/H= 15.321 MW= 250.312 VD= 7.9418

                              KCAL/MOLE   CAL/GRAM   REF
HEAT OF COMBUSTION (NET)
                (GROSS)
HEAT OF VAPORIZATION(25 C)

DENSITY (GRAM/ML)
REFRACTIVE INDEX
SURFACE TENSION
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   405.0   1

 VAPOR PRESSURE EQUATION COEFFICIENTS
                 A   B   C   D   MAX ERR AT P
EQUATION 1
EQUATION 2

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                                           207.   1,3,4

FLAMMABLE LIMITS   LOWER   UPPER
                VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
     DEG C   DELAY(SEC)   REF   DEG C   REF
     534.   3

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                         STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

316

TRIAMYLBENZENE

SYNONYMS.
FORMULA= C21H36   C/H= 6.951 MW= 288.521 VD= 9.J490

                              KCAL/MOLE   CAL/GRAM   REF
HEAT OF COMBUSTION (NET)
                    (GROSS)
HEAT OF VAPORIZATION(25 C)

                    T NOT GIVEN
DENSITY (GRAM/ML) .87   1
REFRACTIVE INDEX
SURFACE TENSION
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   300.0   1

  VAPOR PRESSURE EQUATION COEFFICIENTS
              A   B   C   D   MAX ERR AT P
EQUATION 1
EQUATION 2

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                                         132.   1,3,4

FLAMMABLE LIMITS   LOWER   UPPER
               VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
      DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                         STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

DIAMYLBIPHENYL

SYNONYMS. DIAMYLDIPHENYL
FORMULA= C22H30   C/H= 8.739 MW= 294.484 VD= 10.1546

                         KCAL/MOLE   CAL/GRAM   REF
HEAT OF COMBUSTION (NET)
                (GROSS)
HEAT OF VAPORIZATION(25 C)
----
                   20 C   REF
DENSITY (GRAM/ML) .938   1
REFRACTIVE INDEX
SURFACE TENSION
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   370.0   1

 VAPOR PRESSURE EQUATION COEFFICIENTS
            A   B   C   D   MAX ERR AT P
EQUATION 1
EQUATION 2

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                     171.   1,3

FLAMMABLE LIMITS   LOWER   UPPER
            VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
        DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                          STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

318

TETRAAMYLBENZENE (ISOMERS)

SYNONYMS.
FORMULA= C26H46   C/H= 6.735 MW= 358.657 VD= 12.3675

                        KCAL/MOLE   CAL/GRAM   REF
HEAT OF COMBUSTION (NET)
                  (GROSS)
HEAT OF VAPORIZATION(25 C)

DENSITY (GRAM/ML)
REFRACTIVE INDEX
SURFACE TENSION
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   335.0   3

 VAPOR PRESSURE EQUATION COEFFICIENTS
                A   B   C   D   MAX ERR AT P
EQUATION 1
EQUATION 2

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                      146.   3

FLAMMABLE LIMITS   LOWER   UPPER
              VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
        DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                        STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

319

NAPHTHALENE

SYNONYMS. MOTH FLAKES, WHITE TAR, TAR CAMPHOR
FORMULA= C10H8   C/H= 14.895 MW= 128.175 VD= 4.4198

                              KCAL/MOLE   CAL/GRAM   REF
HEAT OF COMBUSTION (NET)
                   (GROSS)
HEAT OF VAPORIZATION(25 C)
----
                     85 C   REF
DENSITY (GRAM/ML)   .9752   2
REFRACTIVE INDEX   1.5898   2
SURFACE TENSION
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   52.6   85.8   119.3   145.5   193.2   217.9   21

VAPOR PRESSURE EQUATION COEFFICIENTS
             A   B   C   D   MAX ERR AT P
EQUATION 1 5.9284   -1060.58   126.90   -12.48   10.
EQUATION 2 338.774 -23391.2   -46.14   444.0812   -13.75   400.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                      80.   1   88.   4
                      79.   3,4

FLAMMABLE LIMITS   LOWER   UPPER
                 VOL PER   REF   VOL PER   REF
                   .9   1,3,4   5.9   1,3,4
                   .88   27   5.9   27

AUTOIGNITION TEMPERATURE
     DEG C DELAY(SEC) REF   DEG C   REF
     630.   (22)(24)(B)   557.   (27)(45)(B)
     560.   27(B)   587.   27
     558.   1   526.   3,4
     602.   (27)(33)   580.   (27)(76)

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                          STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

320

1-METHYLNAPHTHALENE

SYNONYMS.
FORMULA= C11H10   C/H= 13.108 MW= 142.202 VD= 4.9035

                                KCAL/MOLE   CAL/GRAM   REF
HEAT OF COMBUSTION (NET)
                      (GROSS)
HEAT OF VAPORIZATION(25 C)
----
                    20 C   REF   30 C   REF   37.78 C   REF
DENSITY (GRAM/ML) 1.02015   19   1.01245   19
REFRACTIVE INDEX 1.61755   11   1.6124   19
SURFACE TENSION   40.68   19   39.46   19
VISCOSITY (CS)   2.209   11

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   63.5   107.4   133.6   167.8   244.6   19

 VAPOR PRESSURE EQUATION COEFFICIENTS
              A   B   C   D   MAX ERR AT P
EQUATION 1 7.2026 -1956.16   208.07   -.47   100.
EQUATION 2 64.149 -9014.3   -6.42   11.1050   .04   30.

FLASH POINT(DEG C) (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
                VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
     DEG C   DELAY(SEC) REF   DEG C   REF
     529.   3   553.   50
     547.   24.   49   566.   46

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                         STOICH REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

321

1-ETHYLNAPHTHALENE

SYNONYMS.
FORMULA= C12H12   C/H= 11.916 MW= 156.229 VD= 5.3872

                              KCAL/MOLE   CAL/GRAM   REF
HEAT OF COMBUSTION (NET)
                  (GROSS)
HEAT OF VAPORIZATION(25 C)
----
                    20 C   REF   30 C   REF
DENSITY (GRAM/ML) 1.00816 19   1.00076 19
REFRACTIVE INDEX   1.6062   11   1.6005   19
SURFACE TENSION   40.54   19   39.37   19
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   76.0   120.0   146.2   180.7   258.7   19

  VAPOR PRESSURE EQUATION COEFFICIENTS
                A   B   C   D   MAX ERR AT P
EQUATION 1   7.0957 -1895.00   191.03   .70   10.
EQUATION 2   78.629 -10293.6   -8.39   14.7196   -.16   30.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
                VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
    DEG C   DELAY(SEC)   REF   DEG C   REF
    481.   6.   49

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                        STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

322

BUTYLNAPHTHALENE

SYNONYMS.
FORMULA= C14H16   C/H= 10.427   MW= 184.284   VD= 6.3546

                              KCAL/MOLE   CAL/GRAM   REF
HEAT OF COMBUSTION (NET)
                   (GROSS)
HEAT OF VAPORIZATION(25 C)

DENSITY (GRAM/ML)
REFRACTIVE INDEX
SURFACE TENSION
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   290.0   19

  VAPOR PRESSURE EQUATION COEFFICIENTS
               A   B   C   D   MAX ERR AT P
EQUATION 1
EQUATION 2

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                      360.   1,3,4

FLAMMABLE LIMITS   LOWER   UPPER
              VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
       DEG C DELAY(SEC)   REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                             STOICH REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

AMYLNAPHTHALENE

SYNONYMS. N-PENTYLNAPHTHALENE
FORMULA= C15H18   C/H= 9.930   MW= 198.311   VD= 6.8383

                              KCAL/MOLE   CAL/GRAM   REF
HEAT OF COMBUSTION (NET)
                 (GROSS)
HEAT OF VAPORIZATION(25 C)

DENSITY (GRAM/ML)
REFRACTIVE INDEX
SURFACE TENSION
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   288.0   11

 VAPOR PRESSURE EQUATION COEFFICIENTS
              A   B   C   D   MAX ERR AT P
EQUATION 1
EQUATION 2

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                                            107.   1,4
                                            124.   3

FLAMMABLE LIMITS   LOWER   UPPER
                 VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
       DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                              STOICH REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

NONYLNAPHTHALENE

SYNONYMS.
FORMULA= C19H26   C/H= 8.708   MW= 254.419   VD= 8.7731

                              KCAL/MOLE   CAL/GRAM   REF
HEAT OF COMBUSTION (NET)
                   (GROSS)
HEAT OF VAPORIZATION(25 C)

DENSITY (GRAM/ML)
REFRACTIVE INDEX
SURFACE TENSION
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   372.0   11

 VAPOR PRESSURE EQUATION COEFFICIENTS
              A   B   C   D   MAX ERR AT P
EQUATION 1
EQUATION 2

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                      160.   1

FLAMMABLE LIMITS   LOWER   UPPER
                VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
       DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                          STOICH REF   ABS MIN   REF
MIN ION ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

325

DECYLNAPHTHALENE

SYNONYMS.
FORMULA= C20H28   C/H= 8.512 MW= 268.446 VD= 9.2568

                              KCAL/MOLE   CAL/GRAM   REF
HEAT OF COMBUSTION (NET)
                  (GROSS)
HEAT OF VAPORIZATION(25 C)

DENSITY (GRAM/ML)
REFRACTIVE INDEX
SURFACE TENSION
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   387.0   11

  VAPOR PRESSURE EQUATION COEFFICIENTS
                 A   B   C   D   MAX ERR AT P
EQUATION 1
EQUATION 2

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                    185.   1
                    176.5   3

FLAMMABLE LIMITS   LOWER   UPPER
                VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
     DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                            STOICH REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

DIAMYLNAPHTHALENE

SYNONYMS.
FORMULA= C20H28   C/H= 8.512 MW= 268.446 VD= 9.2568

                              KCAL/MOLE   CAL/GRAM   REF
HEAT OF COMBUSTION (NET)
                  (GROSS)
HEAT OF VAPORIZATION(25 C)

DENSITY (GRAM/ML)
REFRACTIVE INDEX
SURFACE TENSION
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   329.0   3

  VAPOR PRESSURE EQUATION COEFFICIENTS
                A   B   C   D   MAX ERR AT P
EQUATION 1
EQUATION 2

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                                           157.   1,3

FLAMMABLE LIMITS   LOWER   UPPER
               VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
        DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                          STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

327

ANTHRACENE

SYNONYMS. P-NAPHTHALENE, GREEN OIL
FORMULA= C14H10   C/H= 16.683   MW= 178.236   VD= 6.1461

                        KCAL/MOLE   CAL/GRAM   REF
HEAT OF COMBUSTION (NET)
                 (GROSS)
HEAT OF VAPORIZATION(25 C)
----
                 27 C   REF
DENSITY (GRAM/ML) 1.25   2
REFRACTIVE INDEX
SURFACE TENSION
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   145.0 187.2   217.5   250.0   310.2   342.0   21

 VAPOR PRESSURE EQUATION COEFFICIENTS
              A   B   C   D   MAX ERR AT P
EQUATION 1   6.3963 -1524.02   95.01   -17.29   40.
EQUATION 2   395.132 -33629.8 -52.14 508.6889   -8.26 760.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

                     121.   1,3,4   196.   4

FLAMMABLE LIMITS   LOWER   UPPER
               VOL PER   REF   VOL PER   REF
                 .6   1,3,4

AUTOIGNITION TEMPERATURE
      DEG C DELAY(SEC) REF   DEG C   REF
      472.   1,(22)(45)   530.   3,4
      580.   (22)(24)(B)

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                        STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

328

1,2,3,4,5,6,7,8-OCTAHYDROANTHRACENE

SYNONYMS. OCTHRACENE
FORMULA= C14H18   C/H= 9.268 MW= 186.300 VD= 6.4241

	KCAL/MOLE	CAL/GRAM	REF
HEAT OF COMBUSTION (NET)			
(GROSS)			
HEAT OF VAPORIZATION(25 C)			

---

	0 C	REF	89 C	REF
DENSITY (GRAM/ML)	1.134	2		
REFRACTIVE INDEX			1.5363	2
SURFACE TENSION				
VISCOSITY (CS)				

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T							294.0	2

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR AT P
EQUATION 1					
EQUATION 2					

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS	LOWER			UPPER	
	VOL PER	REF		VOL PER	REF

AUTOIGNITION TEMPERATURE

DEG C	DELAY(SEC)	REF	DEG C	REF
315.		(22)(24)(B)		

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

	STOICH	REF	ABS MIN	REF
MIN IGN ENERGY(MILLIJOULE)=				
QUENCHING DISTANCE(CM)=				

PHENANTHRENE

SYNONYMS.
FORMULA= C14H10   C/H= 16.683   MW= 178.236   VD= 6.1461

                              KCAL/MOLE   CAL/GRAM   REF
HEAT OF COMBUSTION (NET)
                  (GROSS)
HEAT OF VAPORIZATION(25 C)
----
                  20 C   REF
DENSITY (GRAM/ML) 1.182   2
REFRACTIVE INDEX 1.5973   2
SURFACE TENSION
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   118.2 173.0   215.8 249.0 308.0 340.2   21

  VAPOR PRESSURE EQUATION COEFFICIENTS
              A   B   C   D   MAX ERR AT P
EQUATION 1 7.6545   -2821.88   250.57   -1.74   10.
EQUATION 2 47.993   -9036.6   -4.17   75.6317   -.96 400.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                                           171.   3

FLAMMABLE LIMITS   LOWER   UPPER
              VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
        DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                              STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

PYRENE

SYNONYMS. BENZO(D,E,F)PHENANTHRENE
FORMULA= C16H10   C/H= 19.066   MW= 202.258   VD= 6.9744

                            KCAL/MOLE   CAL/GRAM   REF
HEAT OF COMBUSTION (NET)
                (GROSS)
HEAT OF VAPORIZATION(25 C)
----
                23 C   REF
DENSITY (GRAM/ML) 1.271   2
REFRACTIVE INDEX
SURFACE TENSION
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   377.0   3

   VAPOR PRESSURE EQUATION COEFFICIENTS
                A   B   C   D   MAX ERR AT P
EQUATION 1
EQUATION 2

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                                          199.   3

FLAMMABLE LIMITS   LOWER   UPPER
                VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
       DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                          STOICH REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

331

FLUORANTHENE

SYNONYMS. IP/RL, 1,2-BENZOACENAPHTHALENE
FORMULA= C16H10   C/H= 19.066 MW= 202.258 VD= 6.9744

		KCAL/MOLE	CAL/GRAM	REF
HEAT OF COMBUSTION	(NET)			
	(GROSS)			
HEAT OF VAPORIZATION(25 C)				

----

	0 C	REF
DENSITY (GRAM/ML)	1.252	2
REFRACTIVE INDEX		
SURFACE TENSION		
VISCOSITY (CS)		

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T							367.0	3

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR AT P
EQUATION 1					
EQUATION 2					

FLASH POINT(DEG C)	(CC)	REF	(OC)	REF
			210.	3

FLAMMABLE LIMITS	LOWER		UPPER	
	VOL PER	REF	VOL PER	REF

AUTOIGNITION TEMPERATURE

DEG C	DELAY(SEC)	REF	DEG C	REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

		STOICH	REF	ABS MIN	REF
MIN IGN ENERGY(MILLIJOULE)=					
QUENCHING DISTANCE(CM)=					

DIPHENYLMETHANE

SYNONYMS. BENZYLBENZENE, DITAN
FORMULA= C13H12   C/H= 12.909   MW= 168.241   VD= 5.8014

                              KCAL/MOLE   CAL/GRAM   REF
HEAT OF COMBUSTION (NET)
                   (GROSS)
HEAT OF VAPORIZATION(25 C)
----
                     20 C   REF
DENSITY (GRAM/ML) 1.0060   2
REFRACTIVE INDEX 1.5768   2
SURFACE TENSION
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   76.0   122.8   157.8   186.3   237.5   264.5   21

 VAPOR PRESSURE EQUATION COEFFICIENTS
              A   B   C   D   MAX ERR AT P
EQUATION 1 7.4930 -2266.36 226.45   -1.64   40.
EQUATION 2 61.891 -9113.1   -6.11   46.2985 -1.48   40.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                     130.   1,3,4

FLAMMABLE LIMITS   LOWER   UPPER
                VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
      DEG C   DELAY(SEC) REF   DEG C   REF
      517.   18.   49   486.   3,4

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL
      33.2 (62)(P)   2351 (62)   1.39 (73)
                          STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

333

1,1-DIPHENYLETHANE

SYNONYMS. ALPHA-METHYLDITAN
FORMULA= C14H14   C/H= 11.916   MW= 182.268   VD= 6.2851

                              KCAL/MOLE   CAL/GRAM   REF
HEAT OF COMBUSTION (NET)
                  (GROSS)
HEAT OF VAPORIZATION(25 C)
----
                  20 C   REF
DENSITY (GRAM/ML) .9875   2
REFRACTIVE INDEX 1.5761   2
SURFACE TENSION
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   286.0   2

 VAPOR PRESSURE EQUATION COEFFICIENTS
                 A   B   C   D   MAX ERR AT P
EQUATION 1
EQUATION 2

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                     129.   1

FLAMMABLE LIMITS   LOWER   UPPER
              VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
     DEG C DELAY(SEC) REF   DEG C   REF
     487.   6.   49

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                         STOICH REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

334

1,1-DIPHENYLPROPANE

SYNONYMS.
FORMULA= C15H16   C/H= 11.171 MW= 196.295 VD= 6.7688

                              KCAL/MOLE   CAL/GRAM   REF
HEAT OF COMBUSTION (NET)
                    (GROSS)
HEAT OF VAPORIZATION(25 C)

DENSITY (GRAM/ML)
REFRACTIVE INDEX
SURFACE TENSION
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T

 VAPOR PRESSURE EQUATION COEFFICIENTS
                A   B   C   D   MAX ERR AT P
EQUATION 1
EQUATION 2

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
                VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
        DEG C DELAY(SEC)   REF   DEG C   REF
        466.   6.   49

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                         STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

335

1,1-DIPHENYLBUTANE

SYNONYMS.
FORMULA= C16H18   C/H= 10.592   MW= 210.322   VD= 7.2525

                              KCAL/MOLE   CAL/GRAM   REF
HEAT OF COMBUSTION (NET)
                   (GROSS)
HEAT OF VAPORIZATION(25 C)

DENSITY (GRAM/ML)
REFRACTIVE INDEX
SURFACE TENSION
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T

  VAPOR PRESSURE EQUATION COEFFICIENTS
                A   B   C   D   MAX ERR AT P
EQUATION 1
EQUATION 2

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
                VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
     DEG C   DELAY(SEC)   REF   DEG C   REF
     462.   6.   49

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                            STOICH REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

336

TETRALIN

SYNONYMS. 1,2,3,4-TETRAHYDRONAPHTHALENE
FORMULA= C10H12   C/H= 9.930 MW= 132.207   VD= 4.5589

                            KCAL/MOLE   CAL/GRAM   REF
HEAT OF COMBUSTION (NET)
                    (GROSS)
HEAT OF VAPORIZATION(25 C)
----
                    20 C   REF   25 C   REF
DENSITY (GRAM/ML) .9702   11   .9662   11
REFRACTIVE INDEX 1.54135   11   1.53919   11
SURFACE TENSION
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   38.0   79.0   110.4   135.3   181.8   207.2   21

  VAPOR PRESSURE EQUATION COEFFICIENTS
               A   B   C   D   MAX ERR AT P
EQUATION 1   7.1604 -1800.41   213.41   .75   10.
EQUATION 2   67.072 -8464.9   -6.95   20.0315   .59   400.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                      77.   1,4   82.   4
                      71.   3

FLAMMABLE LIMITS   LOWER   UPPER
                 VOL PER   REF   VOL PER   REF
                .8 AT 100 C   3   5.0 AT 100 C   3

                    '

AUTOIGNITION TEMPERATURE
      DEG C DELAY(SEC) REF   DEG C   REF
      384.   3   420.   (22)(24)(8)
      423.   6.   49

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL
      36.2 (62)(P)   2319   (62)   1.61   (73)
                           STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

337

T-BUTYLTETRALIN

SYNONYMS. O-DIETHYLBENZENE
FORMULA= C14H20   C/H= 8.341   MW= 188.315   VD= 6.4936

                              KCAL/MOLE   CAL/GRAM   REF
HEAT OF COMBUSTION (NET)
                (GROSS)
HEAT OF VAPORIZATION(25 C)
----
                    20 C   REF   25 C   REF   30 C   REF
DENSITY (GRAM/ML) .87996   11   .87592   11   .87186   19
REFRACTIVE INDEX   1.50346   11   1.50106   11   1.49846   19
SURFACE TENSION   31.98   19   30.82   19
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T

  VAPOR PRESSURE EQUATION COEFFICIENTS
                    A   B   C   D   MAX ERR AT P
EQUATION 1
EQUATION 2

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                      55.5   1(AF)
                      57.   19(AY)
                      57.   3

FLAMMABLE LIMITS   LOWER   UPPER
                    VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
      DEG C   DELAY(SEC)   REF   DEG C   REF
      404.   6.   49   430.   1(AF)

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                         STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

338

4-VINYL-1-CYCLOHEXENE

SYNONYMS. 4-ETHENYL-CYCLOHEXENE
FORMULA= C8H12   C/H= 7.944   MW= 108.185   VD= 3.7305

	KCAL/MOLE	CAL/GRAM	REF
HEAT OF COMBUSTION (NET)			
(GROSS)			
HEAT OF VAPORIZATION(25 C)			

---

	20 C	REF
DENSITY (GRAM/ML)	.8299	2
REFRACTIVE INDEX	1.4639	2
SURFACE TENSION		
VISCOSITY (CS)		

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T							128.9	2

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR AT P
EQUATION 1					
EQUATION 2					

FLASH POINT(DEG C)	(CC)	REF	(OC)	REF
	16.	3,4	21.	1(L)
			23.5	4

FLAMMABLE LIMITS	LOWER		UPPER	
	VOL PER	REF	VOL PER	REF

AUTOIGNITION TEMPERATURE

DEG C	DELAY(SEC)	REF	DEG C	REF
269.		1,3,4		

MAX FLAME VEL(CM/SEC)	FLAME TEMP(DEG K)		VOL PERCENT FUEL	
	STOICH	REF	ABS MIN	REF

MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

STYRENE

SYNONYMS. PHENYLETHYLENE, CINNAMENE, VINYLBENZENE
FORMULA= C8H8   C/H= 11.916 MW= 104.153 VD= 3.5915

HEAT OF COMBUSTION		KCAL/MOLE	CAL/GRAM	REF
OF LIQUID	(NET)	1008.44	9682.	11
	(GROSS)	1050.52	:J086.	11
HEAT OF VAPORIZATION(25 C)				

---

	20 C	REF	25 C	REF	30 C	REF
DENSITY (GRAM/ML)	.90600	11	.90122	11	.89644	19
REFRACTIVE INDEX	1.54682	11	1.54395	11	1.54093	19
SURFACE TENSION	32.3	19			30.98	19
VISCOSITY (CS)						

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	-7.0	30.8		59.8	82.0	122.5	145.2	21

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	7.6453	-1922.12	258.41		-.66	400.
EQUATION 2	24.299	-5164.1	-.88	-6.4687	.63	40.

FLASH POINT(DEG C)	(CC)	REF	(OC)	REF
	31.	1	38.	4
	32.	3,4		

FLAMMABLE LIMITS	LOWER		UPPER	
	VOL PER	REF	VOL PER	REF
	1.1	1,3,4	6.1	1,3,4
	1.1	68	6.1	68

AUTOIGNITION TEMPERATURE

DEG C	DELAY(SEC)	REF	DEG C	REF
490.		1,3,4	450.	54(B)
490.		54		

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                         STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

ALPHA-METHYLSTYRENE

SYNONYMS. ISOPROPENYLBENZENE
FORMULA= C9H10   C/H= 10.725 MW= 118.180 VD= 4.0752

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF LIQUID   (NET)   1151.50   9744.   11
                    (GROSS)   1204.10   10189.   11
HEAT OF VAPORIZATION(25 C)
----
                    20 C   REF   25 C   REF
DENSITY (GRAM/ML) .9090   11   .9046   11
REFRACTIVE INDEX   1.5386   11   1.5358   11
SURFACE TENSION
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   - 400   760   REF
T   7.4   47.1   77.8   102.2 143.0   165.4   21

 VAPOR PRESSURE EQUATION COEFFICIENTS
           A   B   C   D   MAX ERR AT P
EQUATION 1 8.0472 -2287.37   276.98   3.46   100.
EQUATION 2 43.054 -6277.2   -3.67   55.0935   -2.12 400.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                      58.   1   56.5   3

FLAMMABLE LIMITS   LOWER   UPPER
              VOL PER   REF   VOL PER   REF
               .9   1
               .7   3

AUTOIGNITION TEMPERATURE
      DEG C DELAY(SEC) REF   DEG C   REF
      494.   3

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                         STOICH REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

341

VINYLTOLUENE

SYNONYMS. METHYL-ETHENYLBENZENE(M AND P)
FORMULA= C9H10   C/H= 10.725   MW= 118.180   VD=   4.0752

HEAT OF COMBUSTION   KCAL/MOLE   CAL/GRAM   REF
OF LIQUID   (NET)   1152.60   9753.   11
                      (GROSS)   1205.20   10198.   11
HEAT OF VAPORIZATION(25 C)
----
                      20 C   REF   30 C   REF   40 C   REF
DENSITY (GRAM/ML)   .89768   19   .88938   19
REFRACTIVE INDEX   1.54213   19   1.53415   19
SURFACE TENSION   31.53   19   30.44   19   29.38   19
VISCOSITY (CS)   .9277   19   ./263   19

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   18.0   54.7   82.7   104.7   145.1   167.7   21

VAPOR PRESSURE EQUATION COEFFICIENTS
              A   B   C   D   MAX ERR AT P
EQUATION 1   7.3634   -1713.36   214.66   .59   10.
EQUATION 2   66.249   -8083.6   -6.78   5.1247   -.07   40.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                      60.   1   60.   4,19(K)
                      FIRE POINT (DEG C)= 68.   REF 19

FLAMMABLE LIMITS   LOWER   UPPER
              VOL PER   REF   VOL PER   REF
              1.9   19

AUTOIGNITION TEMPERATURE
      DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                        STOICH REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

342

M-DIVINYLBENZENE

SYNONYMS. VINYL STYRENE
FORMULA= C10H10   C/H= 11.916   MW= 130.191   VD= 4.4894

                              KCAL/MOLE   CAL/GRAM   REF
HEAT OF COMBUSTION (NET)
                   (GROSS)
HEAT OF VAPORIZATION(25 C)
----
                    20 C   REF
DENSITY (GRAM/ML) .9289   1
REFRACTIVE INDEX
SURFACE TENSION
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   32.7   73.8   105.5   130.0   175.2   199.5   21

 VAPOR PRESSURE EQUATION COEFFICIENTS
              A   B   C   D   MAX ERR AT P
EQUATION 1   7.4990   -2007.88   235.07   .67   400.
EQUATION 2   54.722   -7630.6   -5.20   27.3569   -.45   100.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                      74.   1   76.   3

FLAMMABLE LIMITS   LOWER   UPPER
                  VOL PER   REF   VOL PER   REF
                    .3   1

AUTOIGNITION TEMPERATURE
        DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                              STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

343

BETA-PHELLANDRENE

SYNONYMS. 1(7),2-P-MENTHADIENE, 3-ISOPROPYL-6-METHYLENECYCLOHEXENE
FORMULA= C10H16   C/H=   7.448 MW= 136.239 VD=   4.6979

                            KCAL/MOLE   CAL/GRAM   REF
HEAT OF COMBUSTION (NET)
                  (GROSS)
HEAT OF VAPORIZATION(25 C)
----
                  20 C   REF   75 C   REF
DENSITY (GRAM/ML) .8520   2   .846   2
REFRACTIVE INDEX 1.4788   2
SURFACE TENSION
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   171.2   1

  VAPOR PRESSURE EQUATION COEFFICIENTS
              A   B   C   D   MAX ERR AT P
EQUATION 1
EQUATION 2

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                      49.   1(J)

FLAMMABLE LIMITS   LOWER   UPPER
                   VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
         DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                            STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

344

(DL)LIMONENE

SYNONYMS. DIPENTENE, CINENE, P-MENTHADIENE-1,8
FORMULA= C10H16   C/H= 7.448 MW= 136.239 VD= 4.6979

	KCAL/MOLE	CAL/GRAM	REF
HEAT OF COMBUSTION (NET)			
(GROSS)			
HEAT OF VAPORIZATION(25 C)			

---

	20 C	REF	21 C	REF
DENSITY (GRAM/ML)			.8402	2
REFRACTIVE INDEX	1.4743	2		
SURFACE TENSION				
VISCOSITY (CS)				

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA

P	1	10	30	40	100	400	760	REF
T	14.0	53.8		84.3	108.3	150.5	174.6	21

VAPOR PRESSURE EQUATION COEFFICIENTS

	A	B	C	D	MAX ERR	AT P
EQUATION 1	7.6440	-2027.85	251.31		1.15	100.
EQUATION 2	35.818	-6186.1	-2.52	8.0835	-1.21	400.

FLASH POINT(DEG C)	(CC)	REF	(OC)	REF
	45.	3		
	42.	1(AH)		

FLAMMABLE LIMITS   LOWER   UPPER
                 VOL PER REF   VOL PER REF
                 .7 AT 150 C 3   6.1 AT 150 C 3

AUTOIGNITION TEMPERATURE
    DEG C   DELAY(SEC) REF   DEG C   REF
    263.   30.   49   292.   3

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                         STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

PINANE

SYNONYMS. 2,6,6-TRIMETHYLBICYCLO(3.1.1)HEPTANE
FORMULA= C10H18   C/H= 6.620 MW= 138.255 VD= 4.7674

                        KCAL/MOLE   CAL/GRAM   REF
HEAT OF COMBUSTION (NET)
                 (GROSS)
HEAT OF VAPORIZATION(25 C)
----
              20 C   REF
DENSITY (GRAM/ML) .8551   2
REFRACTIVE INDEX 1.4609   2
SURFACE TENSION
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   165.0   2

 VAPOR PRESSURE EQUATION COEFFICIENTS
              A   B   C   D   MAX ERR AT P
EQUATION 1
EQUATION 2

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
              VOL PER   REF   VOL PER   REF
              .7 AT 160 C   3   7.2 AT 160 C   3

AUTOIGNITION TEMPERATURE
     DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                        STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

346

ALPHA-PINENE

SYNONYMS. 2,6,6-TRIMETHYLBICYCLO(3.1.1)-2-HEPTENE
FORMULA= C10H16   C/H= 7.448   MW= 136.239 VD=   4.6979

                              KCAL/MOLE   CAL/GRAM   REF
HEAT OF COMBUSTION (NET)
                   (GROSS)
HEAT OF VAPORIZATION(25 C)
----
                    20 C   REF
DENSITY (GRAM/ML) .8582   2
REFRACTIVE INDEX 1.4658   2
SURFACE TENSION
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   -1.0   37.3   66.8   90.1   132.3   155.0   21

 VAPOR PRESSURE EQUATION COEFFICIENTS
              A   B   C   D   MAX ERR AT P
EQUATION 1 7.4447   -1843.66   248.68   .78   400.
EQUATION 2 48.496   -6375.7   -4.47   30.0658   -.18   40.

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                      33.   1,3,4

FLAMMABLE LIMITS   LOWER   UPPER
               VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
       DEG C   DELAY(SEC)   REF   DEG C   REF
       263.   60.   49   275.   (22)(33)(B,AJ)

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                         STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

347

1-PHENYL-2-BUTENE

SYNONYMS.
FORMULA= C10H12   C/H= 9.930 MW= 132.207 VD= 4.5589

                         KCAL/MOLE   CAL/GRAM   REF
HEAT OF COMBUSTION (NET)
                  (GROSS)
HEAT OF VAPORIZATION(25 C)
----
                  20 C   REF
DENSITY (GRAM/ML)
REFRACTIVE INDEX 1.511   10
SURFACE TENSION
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   174.5   3

 VAPOR PRESSURE EQUATION COEFFICIENTS
                  A   B   C   D   MAX ERR AT P
EQUATION 1
EQUATION 2

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                                          71.   3,10(L)

FLAMMABLE LIMITS   LOWER   UPPER
               VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
       DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                          STOICH REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

348

1,3-DIMETHYL-1,3-DIPHENYLCYCLOBUTANE

SYNONYMS.
FORMULA= C18H20   C/H= 10.725 MW= 236.360 VD= 8.1503

                              KCAL/MOLE   CAL/GRAM   REF
HEAT OF COMBUSTION (NET)
                 (GROSS)
HEAT OF VAPORIZATION(25 C)

DENSITY (GRAM/ML)
REFRACTIVE INDEX
SURFACE TENSION
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T   308.0   3

  VAPOR PRESSURE EQUATION COEFFICIENTS
                 A   B   C   D   MAX ERR AT P
EQUATION 1
EQUATION 2

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF
                     143.   3

FLAMMABLE LIMITS   LOWER   UPPER
             VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
       DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL

                              STOICH REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

METHYLENE CYCLOBUTANE

SYNONYMS.
FORMULA= C6H10   C/H= 7.150 MW= 82.147 VD= 2.8326

                          KCAL/MOLE   CAL/GRAM   REF
HEAT OF COMBUSTION (NET)
                  (GROSS)
HEAT OF VAPORIZATION(25 C)

DENSITY (GRAM/ML)
REFRACTIVE INDEX
SURFACE TENSION
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T

 VAPOR PRESSURE EQUATION COEFFICIENTS
                  A   B   C   D   MAX ERR AT P
EQUATION 1
EQUATION 2

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
               VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
     DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL
     51.5   (72)   3.55   (72)
                          STOICH   REF   ABS MIN   REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

350

SPIROPENTANE

SYNONYMS.
FORMULA= C5H8   C/H= 7.448 MW= 68.120 VD= 2.3489

                              KCAL/MOLE   CAL/GRAM   REF
HEAT OF COMBUSTION (NET)
                  (GROSS)
HEAT OF VAPORIZATION(25 C)

DENSITY (GRAM/ML)
REFRACTIVE INDEX
SURFACE TENSION
VISCOSITY (CS)

VAPOR PRESSURE(MM HG)-TEMPERATURE(DEG C) DATA
P   1   10   30   40   100   400   760   REF
T

 VAPOR PRESSURE EQUATION COEFFICIENTS
              A   B   C   D   MAX ERR AT P
EQUATION 1
EQUATION 2

FLASH POINT(DEG C)   (CC)   REF   (OC)   REF

FLAMMABLE LIMITS   LOWER   UPPER
              VOL PER   REF   VOL PER   REF

AUTOIGNITION TEMPERATURE
      DEG C DELAY(SEC) REF   DEG C   REF

MAX FLAME VEL(CM/SEC)   FLAME TEMP(DEG K)   VOL PERCENT FUEL
      59.9 (72)   3.46 (72)
                         STOICH REF   ABS MIN REF
MIN IGN ENERGY(MILLIJOULE)=
QUENCHING DISTANCE(CM)=

351

V. NOTES

A   Upward propagation with lower tube end open.

B   In atmosphere of oxygen.

C   Apparent values at 15.56 degrees C.

D   At saturation pressure.

E   Using flanged electrodes.

F   Using 0.0225-in. S.S. electrodes with spark duration of 1 MSEC.

G   Absolute values from weights in vacuum.

H   Upward propagation in a 2-in. tube closed at both ends.

J   Tag closed cup.

K   Cleveland open cup.

L   Tag open cup.

M   Extrapolated to room temperature from values at higher temps.

N   Values obtained on platinum plate.

P   Measured at elevated temperature by Bunsen Burner
Schlieren total-area method and extrapolated to room temp.

Q   Calculated from specific gravity.

R   At normal boiling point.

S   Value listed under cetane.

T   For the undercooled liquid below the normal freezing point.

U   Values were determined in a 2-in. diameter tube closed at both
ends with upward propagation. Data were taken off curves since
no tabulated data were given. The data were converted from
percent stoichiometric at 360 mm pressure.

V   Values were determined in a 2-in. diameter tube closed at both
ends with upward propagation. Data were taken off curves
since no tabulated data were given. The data were converted
from percent stoichiometric at 340 mm pressure.

W   Tube diameter 7.5 cm., tube 150 cm. long closed at both ends.

X   Upward propagation.

Y   Horizontal propagation.

Z   Downward propagation.

AA   Tube diameter 5.0 cm., tube 150 cm. long closed at both ends.

BB   Using unflanged electrodes.

CC   Value listed under Dimethyl Butane.

DD   Reference gives the value as estimated.

EE   For solid-vapor equilibrium.

FF   Value listed under 2-Ethylbutane.

GG   Value listed under Tetramethylpentane.

HH   Value listed under 1,4-Dimethylcyclohexane.

JJ   Value listed under Decalin.

KK   Formula given in reference as $C_{12}H_{18}$.

LL   Value listed under Butylene.

MM   Value listed under Diisobutylene.

NN   Value listed under B-N-Amylene.

PP   Value listed under N-Amylene.

QQ   Value listed under 2,4,4-Trimethyl-1-Pentene.

RR   Value listed under Hexylene.

SS   Value refers to a mixture of 35.6 percent Trans-2-Hexene and
      63.6 percent CIS-2-Hexene.

TT   Value listed under Alpha-N-Heptylene.

UU   Value refers to a mixture of 17.0 percent Trans-2-Heptene and
      82.3 percent CIS-2-Heptene.

VV   Value refers to a mixture of 4 percent Trans-2-Heptene and
      96 percent CIS-2-Heptene.

WW   Value refers to a mixture of 57.5 percent Trans-3-Heptene.
      38.8 percent CIS-3-Heptene, 1.2 percent Trans-2-Heptene, 0.6
      percent CIS-2-Heptene, and 1.9 percent lights.

XX   Value is average of CIS and Trans isomers.

YY   Value listed under Butadiene.

ZZ   Value refers to a mixture of 83.0 percent Trans-1,3-Pentadiene,
      7.9 percent CIS-1,3-Pentadiene, and 8.2 percent Cyclopentene.

AB   Value listed under Diallyl.

AC   Value listed under Crotonylene.

AD   For technical grade material.

AE   Value listed under 4-Methyl Pentyl Benzene.

AF   Value listed under Diethyl Benzene.

AG   Value listed under Diisopropylbenzene.

AH   Value listed under Dipentene.

AJ   Value listed under Pinene.

AK   5X180-cc vertical tube.

AL   Heated in an 88-cc Quartz Bulb.

AM   Heated in a 131-cc Quartz Bulb.

AN   Procedure involves dropping liquid on bath surface.

AP   Procedure involves dropping liquid into porcelain crucible.

AQ   740 mm Hg.

AR   Saybolt Seconds Universal

AS   15 mm Hg.

AT   125-cc/Min air flow, dropwise addition into 43-cc S.S. cup.

AU   Zero air flow, dropwise addition into 43-cc S.S. cup.

AV   131-cc Quartz Bulb, 81.6-86.7 percent C_2H_2

AW   131-cc Quartz Bulb, 30.6-38.4 percent C_2H_2.

AX   ASTM D86-30, Quartz Flask.

356

357

358

361

362

VII. REFERENCES

1. N. Irving Sax, "Dangerous Properties of Industrial Materials," 2nd Ed., Reinhold Publishing Corporation, New York, 1963, pp. 383-1342.

2. Robert C. Weast, Ed., "Handbook of Chemistry and Physics," 46th Ed., The Chemical Rubber Co., Cleveland, Ohio, 1965.

3. National Fire Protection Association, "National Fire Codes," Vol. 1, Boston Mass., 1963, pp. 14-126.

4. Factory Mutual Engineering Corporation, "Handbook of Industrial Loss Prevention," McGraw-Hill Book Company, Hightstown, N.J., 1967, Chapter 42.

5. Factory Mutual Engineering Corporation, "Properties of Flammable Liquids, Gases, and Solids," IEC, Vol. 32, 1940, p. 880.

6. Mine Safety Appliances Company, "Technical Information," Section 10, Pittsburgh, Pa.

7. Henry C. Barnett and Robert R. Hibbard, Eds., "Basic Considerations in the Combustion of Hydrocarbon Fuels with Air," Lewis Flight Propulsion Laboratory, Report No. 1300, 1957.

8. Phillips Petroleum Company, "Reference Data for Hydrocarbons and Petro-sulfur Compounds," Bulletin No. 521, Bartlesville, Oklahoma. 1962.

9. Phillips Petroleum Company,"Phillips 66 Hydrocarbons and Petro-Sulfur Compounds," Bulletin 518, 5th Ed., Bartlesville, Oklahoma, 1958.

10. Phillips Petroleum Company, "Phillips 66 Hydrocarbons and Petro-sulfur Compounds," Bulletin 522, 6th Ed., Bartlesville, Oklahoma, 1964.

11. American Petroleum Institute, "Technical Data Book-Petroleum Refining," New York, N. Y., 1966.

12. H.F.Coward and G.W.Jones, "Limits of Flammability of Gases and Vapors," Bureau of Mines Bulletin 503, Washington, D.C., 1952.

13. Dipiazza et. al., "Flammability Limits of Hydrocarbon-Air Mixtures - Reduced Pressures," IEC, Vol. 43, 1951, p. 2721.

14. Adolph E. Spokowski, "Pressure Limits of Flame Propagation of Pure Hydrocarbon-Air Mixtures at Reduced Pressure," NACA RM E52H15, 1952.

15. Clara E. Miller and F. D. Rossini "Physical Constants of Hydrocarbons, C_1 to C_{10}," American Petroleum Institute, July 1961.

16. American Society for Testing Materials, "Physical Constants of Hydrocarbons-Boiling Below $350^{o}F$," Special Technical Pub. No. 109, 1950.

17. J. H. Burgoyne and G. Williams-Leir. "Limits of Inflammability of Gases in the Presence of Diluents," Fuel, Vol. 27, 1948, p.118.

18. Fenn, "Lean Flammability Limit and Minimum Spark Ignition Energy," IEC, Vol. 43, 1951, p. 2865.

19. R. R. Dreisbach, "Physical Properties of Chemical Compounds," Vol. 15, Advances in Chemistry Series, Washington, D.C., American Chemical Society, June 1955.

20. R. R. Dreisbach, "Physical Properties of Chemical Compounds - II," Vol. 22, Advances in Chemistry Series, Washington, D. C., American Chemical Society, March 1959.

21. Daniel R. Stull, "Vapor Pressure of Pure Substances - Organic Compounds," IEC, Vol. 39, 1947, pp. 517-40.

22. B.P.Mullins,"Spontaneous Ignition of Liquid Fuels", AGARDograph No.4, London, Butterworths Scientific Publications, 1955, pp.61-70.

23. J. Tausz and F.Schulte,"Ignition Points and Processes of Combustion in a Diesel Engine," Mitt.Chem.-tech.Inst. Hochschule Karlsrule, No.2, 1924, pp.1-60.

24. C. Zerbe and F.Eckert,"Spontaneous Ignition Characteristics and Chemical Constitution," Angew, Chem., Vol. 45, 1932,pp.593-8.

25. G.S.Scott, G.W.Jones and F.E.Scott, "Determination of Ignition Temperatures of Combustible Liquids and Gases. Modification of the Drop-Method Apparatus," Analytical Chemistry, Vol. 20, 1948, pp. 238-41.

26. G.W. Jones and W.E.Miller, "Ignition Temperatures of Acetylene-Air and Acetylene-Oxygen Mixtures," Rep.Invest.U.S.Bur. Min. No. 3567, 1941.

27. G.W.Jones and G.S.Scott, "Limits of Inflammability and Ignition Temperatures of Naphthalene," Rep. Invest. U.S.Bur.Mines No. 3881, 1946.

28. G.W.Jones, H.Seaman and R.E.Kennedy," Explosive Properties of Dioxan-Air Mixtures," IEC, Vol. 25, 1933, p.694.

29. H.F.Coward, G.W.Jones, C.G.Dunkle and B.E.Hess, Min. Metall. Invest., Pittsburg, Inst.Tech.Min.Met. Advy. Bds. Bulletin 30, 1926.

30. G.W.Jones, R.E.Kennedy and G.J.Thomas, "Explosive Properties of cyclopropane: Prevention of Explosions by Dilution with Inert Gases," U.S.Bur.Mines Rept. Invest.No. 3511, 1940.

31. B.Lewis, "Ignition of Explosive Gas Mixtures by Electric Sparks," Report.Invest.U.S.Bur.Min.No.4502, 1947.

32. G.W.Jones, W.P.Yant, W.E.Miller and R.E.Kennedy, "The Ignition Temperatures of Diethyl Ether and Ethylene in Air and in Oxygen," Rept. Invest. U.S.Bur.Min.No. 3284,1935.

33. W.R.Ormandy and E.C.Craven, "Further Experiments with The Moore Spontaneous Ignition Meter," J.Instn. Petroleum Tech., Vol. 10, 1924, pp. 335-41.

34. H.Moore, "Spontaneous Ignition Temperature of Liquid Fuels for Internal Combustion Engines," J.Soc.Chem. Ind., London, Vol. 36, 1917, pp. 109-12.

35. H. Moore, "Spontaneous Ignition Temperatures of Liquid Fuels," J. Instn. Petroleum Tech.," Vol. 6, 1920, pp 186-223.

368

36. H.B.Dixon and H.F.Coward, "Ignition Temperatures of Gases," J.Chem.Soc., Vol. 95, 1909, p. 514.

37. H.F.Coward, "Ignition Temperatures of Gases," J.Chem. Soc., 1934, pp. 1382-1406.

38. N.J.Thompson, "Autoignition Temperatures of Flammable Liquids," IEC, Vol. 21, 1929, pp.134-9.

39. F.Goldmann, "The Ignition of Meeting Streams of Oxygen and Combustible Gases," Z.Phys.Chem.(B), Vol. 5, 1929, pp.316-26.

40. H.J.Masson and W.F.Hamilton, "A Study of Autoignition Temperatures. II. Pure Compounds," IEC, Vol. 20, 1928, pp. 813-16.

41. A.H.Nuckolls, "Comparative Live, Fire and Explosion Hazards of Common Refrigerants," Underwriters Lab. Misc. Hazards No. 2375, 1933.

42. Underwriters Lab. Card Data Service Ser. No.26.

43. Underwriters Lab. Bull. Res. No. 43.

44. A. H. Nuckolls, "Propagation of Flame in Pipes and Effectiveness of Arrestors," Underwriters Lab. Spec. Invest. No. 528, 1919.

45. G. Wollers and V. Ehmcke, "Der Vergassungsvergang der Treibmittel, die Olgasbildung und das Verhalten der Oldampfe und Olgase bei der Verbrennung im Dieselmotor," Kruppsche Monatshefte, Vol. II, 1921, pp. 1-20.

46. C.W.Sortman, H.A.Beatty and S.D.Heron, "Spontaneous Ignition of Hydrocarbons: Zones of Non-Ignition," IEC, Vol. 33, 1941, pp. 357-60.

47. J.S.Lewis, "Low-Temperature Oxidation. III. The Lag in Ignition of Some Hydrocarbons," J. Chem. Soc., 1930, pp. 2241-54.

48. C.A.Naylor and R.V.Wheeler, "The Ignition of Gases. VI. Ignition by a Heated Surface. Mixtures of Methane with Oxygen and Nitrogen, Argon or Helium," J.Chem.Soc. 1931, pp. 2456-67.

49. J. L. Jackson, "Spontaneous Ignition Temperatures of Commercial Fluids and Pure Hydrocarbons," IEC, Vol. 43, 1951, pp. 2869-70.

50. C.E.Frank and A.U.Blackham, "Spontaneous Ignition of Organic Compounds," IEC, Vol. 44, 1952, pp.862-7.

51. C.E.Frank, A.U.Blackham and D.E.Swarts, "Spontaneous Ignition of Lubricating Oils," IEC,Vol. 45, 1953, pp. 1753-9.

52. B.P.Mullins and S.S.Penner, "Explosions, Detonations, Flammability and Ignition," AGARDograph 31, New York, Pergamon Press, 1959.

53. B. Lewis and G. von Elbe, "Combustion, Flames and Explosions of Gases,"2nd Ed., New York, Academic Press Inc. 1961.

54. B. Lewis, "Report of Research and Technologic Work on Explosives, Explosions and Flames, Fiscal Years 1947 and 1948," U.S.Bur. Min. Rept.Invest. No. 4502, 1949.

55. Dorothy Martin Simon, "Flame Propagation. III. Theoretical Considerations of the Burning Velocities of Hydrocarbons," J.Am.Chem.Soc., Vol. 73, No.1, 1951, pp. 422-25.

56. M.V.Blanc, P.G.Guest, G. von Elbe and B. Lewis, "Ignition of Explosive Gas Mixtures by Electric Sparks. III. Minimum Ignition Energies and Quenching Distances of Mixtures of Hydrocarbons and Ether with Oxygen and Inert Gases," Third Symposium on Combustion and Flame and Explosion Phenomena, The Williams and Wilkins Co., 1949, pp. 363-67.

57. H.F.Calcote, C.A.Gregory, C.M.Barnett and Ruth B. Gilmer, "Spark Ignition - Effects of Molecular Structure," IEC, Vol. 44, 1952, pp.2656-2662.

58. A.J.Metzler, "Minimum Ignitions Energies of Six Pure Hydrocarbon Fuels of the C_2 and C_6 Series," NACA RM E52F27, 1952.

59. A.J.Metzler, "Minimum Spark-Ignition Energies of 12 Pure Fuels at Atmospheric and Reduced Pressure," NACA RM E53H31, 1953.

60. Selected Values of Properties of Hydrocarbons and Related Compounds," American Petroleum Institute Research Project 44, Carnegie Institute of Technology, 1960.

61. G.G.Brown, D.L.Katz, G.Oberfell and R.C.Alden, "Natural
    Gasoline and the Volatile Hydrocarbons Section One,"
    National Gasoline Association of America, 1948.

62. Paul Wagner and G.L.Dugger, "Flame Propagation. V. Structural
    Influences on Burning Velocity. Comparisons of Measured and
    Calculated Burning Velocity," J.Am.Chem.Soc., Vol. 77, 1955,
    pp. 227-31.

63. Dorothy Martin Simon, "Flame Propagation - Active Particle
    Diffusion Theory," IEC, Vol. 43, 1951, pp. 2718-21.

64. Oscar Levine and Melvin Gerstein, "Fundamental Flame Velocities
    of Pure Hydrocarbons. III. Extension of Tube Method to High
    Flame Velocities - Acetylene-Air Mixtures," NACA RM E51J05, 1951.

65. G.W.Jones and G.S.Scott, "Extinction of Isobutane Flames by
    Carbon Dioxide and Nitrogen," U.S.Bur.Min.Rept.Invest.No.4095,
    1947.

66. Wilber J.Huff, "Explosives and Explosions, Fiscal Year 1944,"
    U.S.Bur.Min.Rept.Invest.No.3794, 1945.

67. J.S.Forsyth and D.T.A.Townend, "The Inflammation Ranges of
    Ethylene-Air Mixtures," Engineering, Vol. 149, 1960.

68. Wilber J.Huff, "Annual Report of Explosives Division,Fiscal
    Year 1942," U.S.Bur.Min.Rept. Invest. No. 3669, 1942.

69. M.Gerstein, O.Levine and E.L.Wong, "Flame Propagation. II. The
    Determination of Fundamental Burning Velocities of Hydrocarbons
    by a Revised Tube Method," J.Am.Chem. Soc. Vol. 73, No.1,
    1951, pp. 418-422.

70. M.V.Sullivan, J.K.Wolfe and W.A.Zisman, "Flammability of the
    Higher Boiling Liquids and Their Mists," IEC, Vol. 39, No.12,
    1947, pp. 1607-14.

71. G.W.Jones and R.E.Kennedy, "Extinction of Propylene Flames by Diluting with N_2 and CO_2 and Some Observations on the Explosive Properties of Propylene," U.S.Bur.Min.Rept.Invest. No. 3395, 1938.

72. M.Gerstein, O.Levine and E.L.Wong, "Fundamental Flame Velocities of Hydrocarbons," IEC, Vol. 43, 1951, pp. 2770-2772.

73. L. Gibbons, H.C.Barnett and M.Gerstein, "Effect of Molecular Structure on Combustion Behavior," IEC, Vol. 46, 1954.pp.2150-2159.

74. Cleveland O'Neal, "Effect of Pressure on the Spontaneous Ignition Temperature of Liquid Fuels," NACA Tech. Note 3829, 1956.

75. White, "Limits for the Propagation of Flame in Vapor-Air Mixtures. I. Mixtures of Air and One Vapor at Ordinary Temperature and Pressure," J.Chem.Soc., Vol. 121, 1922, pp. 1244-70.

76. H.L.Callendar, "Dopes and Detonation," Engineering, Vol. 127,1927, pp. 147-148.

77. A. C. Egerton and J. Powling, J.Proc.Royal Soc. A193, 1948, p. 190.

78. D.F.Marsh, Univ. Calif.,Publications in Pharmacology, Vol. 1, 1940, p.369.

79. G.W.Jones and R.E.Kennedy, "Limits of Inflammability of Butadiene in Air," U.S.Bur.Min.Rept.Invest.No. 3565, 1941.

Unclassified	**DOCUMENT CONTROL DATA - R & D**		
(Security classification of title, body of abstract and indexing annotation must be entered when the overall report is classified)			

1. ORIGINATING ACTIVITY *(Corporate author)*	2a. REPORT SECURITY CLASSIFICATION
U.S.Army Aberdeen Research and Development Center	Unclassified
Ballistic Research Laboratories	2b. GROUP
Aberdeen Proving Ground,Maryland 21005	

3. REPORT TITLE

Hydrocarbon Combustion and Physical Properties

4. DESCRIPTIVE NOTES *(Type of report and inclusive dates)*

5. AUTHOR(S) *(First name, middle initial, last name)*

Dudley J. McCracken

6. REPORT DATE	7a. TOTAL NO. OF PAGES	7b. NO. OF REFS
September 1970	374	79

8a. CONTRACT OR GRANT NO.	9a. ORIGINATOR'S REPORT NUMBER(S)
b. PROJECT NO. RDT&E 1T061101A91A	BRL Report No. 1496
c.	9b. OTHER REPORT NO(S) *(Any other numbers that may be assigned this report)*
d.	

10. DISTRIBUTION STATEMENT

This document has been approved for public release and sale; its distribution is unlimited.

11. SUPPLEMENTARY NOTES	12. SPONSORING MILITARY ACTIVITY
	U.S.Army Materiel Command
	Washington, D.C.

13. ABSTRACT

Many tabulations of hydrocarbon combustion properties are found in the literature. Unfortunately, most of these report what the author believes to be the best value for each property, and do not include all combustion properties. This report presents a compilation of combustion and physical properties which can be used in a variety of combustion problems. Referenced values are included for flash point, flammability limits, autoignition temperature, maximum flame velocity, minimum ignition energy, and quenching distance. The physical properties include molecular weight, carbon-hydrogen ratio, vapor density, heats of combustion and vaporization, liquid density, refractive index, surface tension, viscosity and vapor pressure data.

DD <small>FORM</small> **1473** <small>REPLACES DD FORM 1473, 1 JAN 64, WHICH IS OBSOLETE FOR ARMY USE.</small>

14 KEY WORDS	LINK A		LINK B		LINK C	
	ROLE	WT	ROLE	WT	ROLE	WT
Hydrocarbon Combustion Data						
Flash Point						
Autoignit ion Temperature						
Flammability Limits						
Minimum Ignition Energy						